

Meeting Agenda

Meeting Title:	Evolution of Pilbara Network Rules Working Group
Workstream	Workstream 2 (HTR Workstream)
Date:	10 September 2025
Time:	10:30am – 12:30pm
Location:	Online, via TEAMS

Item	Item	Responsibility	Type	Duration
1	Welcome and Agenda <ul style="list-style-type: none"> Conflicts of interest Competition Law 	Chair	Noting	1 min
2	Meeting Apologies and Attendance	Chair	Noting	2 min
3	Minutes of Meeting 2025_09_10 (published 27 August 2025)	Chair	Noting	2 min
4	HTR Implementation:	Chair / Issue Leads	Discussion	1h 30 min
5	New Issues for HTR List	Chair	Discussion	20 min
6	Next steps	Chair	Noting	5 min
	Next meeting: Thursday 9 October 2025			

Competition and Consumer Law Obligations

Members of the PAC's Evolution of the Pilbara Network Rules Working Group (**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.
- (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; and
 - a forum like the EPNRWG is capable being a place where such cooperation could occur.
- (c) **anti-competitive contracts, arrangements understandings**: any contract, arrangement or understanding which has the purpose, effect or likely effect of substantially lessening competition.
- (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.
- (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.

A contravention of the CCA could result in a significant fine (up to \$500,000 for individuals and more than \$10 million 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, 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.



Agenda Item 4

HTR Implementation

This table provides the status of HTR Issues (as of 3 September 2025) provided by Issue Leads. Where materials have been provided by Issue Leads to support discussion at the working group meeting on 10 September 2025, a page number reference is provided.

Note. Where no status update has been received from Issue Leads, this is denoted by a dash (-), while 'no update' is used to reflect Issue Leads report.

Issue ID		Priority	Simple or Substantive	Lead	Support	Status	Page #
I3	I3	High	Substantive	Noel (Rio)	David (HP); Lekshmi (BP), James (ISO); Njabulo and Bec (BHP)	• -	
	I36	Moderate	Substantive				
I4		High	Simple	David (HP)	Nik (APA); Njabulo and Bec (BHP); Noel (Rio), James (ISO)	• Has progressed to drafting (10 July 2025)	
I5	I5	High	Substantive	David (HP)	Nik (APA); Shervin and Scott (Woodside); Lekshmi (BP); James (ISO); Njabulo and Bec (BHP); Noel (Rio)	• -	
	I6	High	Substantive				
	I14	High	Substantive				
	I15	High	Substantive				
	I16	High	Substantive				
	I17	High	Substantive				

	I19	High	Substantive				
	I34	Moderate	Substantive				
I7		High	Substantive	Nik (APA)	Njabulo and Bec (BHP); James (ISO); Noel (Rio); Lekshmi (BP)	• -	
I8	I8	High	Substantive	James (ISO)	David (HP); Noel (Rio); Njabulo and Bec (BHP), Nik (APA)	• -	
	I9	High	Substantive				
	I12	High	Substantive				
I10		High	Substantive	Njabulo (BHP)	Nik (APA); David (HP)	• Has progressed to drafting (7 August 2025)	
I11		High	Substantive	Njabulo (BHP)	Nik (APA); David (HP)		
I13	I13	High	Substantive	James (ISO)	David (HP); Njabulo and Bec (BHP), Nik (APA)	• -	P.5
	I37	Moderate	Substantive				
I18		High	Simple	Lekshmi (BP)	Njabulo and Bec (BHP)	• Has progressed to drafting (10 July 2025)	P.7
I22		Moderate	Simple	David (HP)	Njabulo and Bec (BHP); Noel (Rio); Nik (APA)	• Has progressed to drafting (10 July 2025)	
I23		Moderate	Simple	David (HP)	Nik (APA); Njabulo and Bec (BHP)	• Has progressed to drafting (10 July 2025)	
I24	I24	Moderate	Simple	David (HP)	Lekshmi (BP); Njabulo and Bec (BHP); Noel (Rio); Nik (APA); James (ISO)	• Has progressed to drafting (10 July 2025)	
	I25	Moderate	Simple				
I26		Moderate	Simple	David (HP)	Njabulo and Bec (BHP); Nik (APA)	• -	

I27	Moderate	Simple	Nik (APA)	David (HP); James (ISO); Njabulo and Bec (BHP); Noel (Rio)	• -	
I28	High	Substantive	David (HP)	Noel (Rio); James (ISO); Njabulo and Bec (BHP), Nik (APA)	• -	
I29	High	Substantive (study likely)	Peter (ISO)	David (HP); Njabulo and Bec (BHP)	• Has progressed to drafting (10 July 2025)	
I30	High	Substantive	Shervin and Scott (Woodside)	David (HP); Noel (Rio); Njabulo and Bec (BHP), Nik (APA), James (ISO)	• Has progressed to drafting (10 July 2025)	
I32	I32	Moderate	Substantive (study likely)	James (ISO)	Noel (Rio); David (HP); Njabulo and Bec (BHP), Nik (APA)	• Has progressed to drafting (10 July 2025)
	I33	Moderate	Substantive (study likely)	James (ISO)		• Has progressed to drafting (10 July 2025)
I35	Moderate	Substantive	Njabulo (BHP)	Nik (APA)	• -	
I38	Moderate	Substantive	Njabulo (BHP)	Shervin and Scott (Woodside)	• Has progressed to drafting (7 August 2025)	
I40	Low	Simple	David (HP)	Njabulo and Bec (BHP)	• Has progressed to drafting (10 July 2025)	
I41	I41	Low	Simple	James (ISO)	Noel (Rio); Njabulo and Bec (BHP), Nik (APA)	• Has progressed to drafting (10 July 2025)
	I42	Low	Simple			• Has progressed to drafting (10 July 2025)
I44	Low	Simple	Noel (Rio)	James (ISO); David (HP); Nik (APA); Njabulo and Bec (BHP)	• -	
I2025.1	Moderate		Peter (ISO)	Nik (APA), Matthew (Rio)	• Draft proposal paper received (2 September 2025)	P.8



I2025.2	High		Nik (APA)	Peter (ISO), David (HP)	• -	
I2025.3	Moderate		Peter (ISO)	-	• Has progressed to drafting (10 July 2025)	
I2025.4	High		Peter (ISO)	-	• -	P.11
I2025.5	Moderate		Peter (ISO)	-	• -	P.13
I2025.6	High		Peter (ISO)	-	• Has progressed to drafting (7 August 2025)	
I2025.7	Low		Peter (ISO)	-	• Has progressed to drafting (7 August 2025)	

Issue 13

Dear Working Group Member,

Please find below my suggestion wrt HTR Working Group Issue 13 being the inconsistent definition and use of the terms 'energisation' and 'commercial operations' .

Issue - energisation

- The HTR has a definition of *energisation* but the word is not used. Multiple variations of energise, energising, energised etc. are used in the HTR but without definition. The words energised and energisation are used in the PNR without definition.
- The HTR definition of *energisation* means “the act or process of operating switching equipment or starting up generating unit, which results in there being a non-zero voltage beyond a connection point or part of the transmission system or the distribution system.”
- This HTR definition and context in which word variants are used problematic. For example, a Facility must be ‘energised’ at LV for testing and commissioning of secondary systems etc. prior to connecting to a grid at HV in order to perform testing commissioning of primary equipment and generating units. However the requirements for LV energisation are better dealt with under the Electricity (Licensing) Regulations 1991 which requires a Electrical Safety Certificate (ESC) to be issued by the licensed electrical contractor after the work is completed and inspected, proving it meets the standards outlined in the WA Electrical Requirements and Australian Standards.

Issue - commercial operation

- The term *commercial operation* is used in the HTR but not defined, and is not used in the PNR. In the SWIS WEM *commercial operation* is a status conferred by AEMO that a Facility is operating in the Wholesale Electricity Market. This term is not applicable to the NWIS at present given there is no market and it is not relevant to ISO’s current functions in the NWIS.
- Consequently, the term *commercial operation* should be avoided to minimise the possibility of confusion and removed from the HTR.

Proposal

Firstly, the proposal is to remove the definition of the word energisation from the HTR, and include a new section to better define the relevant concepts required consistent with WA WEM Rules 3A.8 to facilitate the coordination of energising a Facility and connecting to the grid for the purposes of generating or consuming electricity. Also, at a high level, the proposal is to include in the HTR definitions of:

- Commissioning Test Plan,
- Interim Approval to Generate, and
- Approval to Generate.

and also include requirements such that:

- A Rules Participant must not generate electricity without an approved Commissioning Test Plan, Interim Approval to Generate or Approval to Generate
- A Commissioning Test Plan must be approved by ISO.
- ISO may, in its discretion:
 - a) issue an Interim Approval to Generate; and
 - b) place conditions on an Interim Approval to Generate, and
 - c) require conditions to mitigate any risks to security and reliability.
- ISO may only issue and place conditions on an Interim Approval to Generate where they do not consider compliance or performance in accordance with the applicable technical standards has been demonstrated.

- ISO may only issue and Approval to Generate where:
 - a) compliance or performance in accordance with the applicable technical standards has been demonstrated, or if compliance has not been demonstrated a plan to achieve compliance or any necessary exemption has been agreed.
 - b) A generator monitoring program has been approved by ISO.
 - c) ISO has fulfilled all of it's obligations under PNR 270.

Also, the proposal is to remove the term *commercial operation* from the HTR, and use the term Approval to Generate in lieu (reword grammar etc. where necessary).

All of the above is generally consistent with current practise and is only intended to provide clarity to Participants of the steps required to connect and generate or consume electricity in the NWIS.

I would appreciate your consideration and any feedback on the above suggestion. I will set up a meeting next week to discuss if necessary.

Should you have any queries or wish to discuss any matter please do not hesitate to contact me.

Cheers,

Neil Gibbney
BE MIEAust NPER

EPNRWG (HTR) – Issue 18

EPNR (HTR) Meeting 2025_10_09

1. Purpose

Determine whether the caveat that allows the dead band of a generating unit to be adjustable if agreed to in an access contract show be clarified or removed.

2. Background

Currently, the Harmonised Technical Rules (PHTR) frequency control requires generating systems to maintain a dead band within which they provide no frequency response.

The dead band requirement in the HTR is defined in Clause 3.3.4.4(d):

3.3.4.4 Frequency control

...

(d) **Dead Band**

The dead band of a *generating unit* (the sum of increase and decrease in *power system frequency* before a measurable *change* in the *generating unit's active power output* occurs) must be less than 0.05 Hz, **unless an adjustable dead band is agreed to in the access contract.**

...

WG members raised a concern that the way the current requirements are written are unclear, as they do not specify how the 0.05 Hz dead band is applied. Noting that the dead band is applied on the fundamental frequency, there are a few likely interpretations to how this requirement can be applied.

Issue 18 calls for a redefinition of the dead band of a generating unit to be less than or equal to ± 0.025 Hz around 50 Hz.

Additionally, WG members have noted that the conditions that may lead to an adjustable dead band being agreed to within an access contract (highlighted above) should either be clarified or the caveat should be removed.

3. Questions to Members

The questions for members are:

- Can members provide examples/cases in which the caveat in clause 3.3.4.4(d) has been useful or applicable in the NWIS?
- Should the caveat in clause 3.3.4.4(d) be removed or clarified? If the latter, how would you recommend doing so?

1. PHTR Issue I2025.1 – Review of HTR cl. 2.2.2(c) (varying voltage operating standard by agreement)

1.1 Issue I2025.1 - Classification

High priority

1.2 Issue I2025.1 - Description

HTR 2.2.2(c) enables an NSP to agree alternative voltage targets with a controller for a point on the network. This may change the fundamental voltage operating standard for that part of the network for all future connections. It seems inappropriate for an NSP to have this power.

Background

HTR clause 2.2.2(c) has its roots in the Western Power Technical Rules and came from a need to manage compliance with voltage operating standards for Low Voltage (LV) networks. The normal voltage operating range for LV systems is +/-6% of nominal voltage (HTR 2.2.2(a)(1)), while for transmission and distribution systems operating at 6.6 kV and above the range is 90-110% of nominal voltage (HTR 2.2.2(a)).

It was found by NSPs to be difficult and, at times impossible, to maintain the LV system within +/-6% of nominal voltage if the upstream Medium Voltage (MV) or High Voltage (HV) system was allowed to operate at or close to the lower boundary of its permitted voltage operating range. A tighter voltage operating range was often agreed for the MV or HV system with relevant operators, to ensure the LV system's voltage was maintained within +/-6%.

The LV systems which typically supply larger numbers of small industrial and residential customers. Unlike MV and HV customers who typically own and operate transformers with tap changers, these LV customers typically do not have control over the voltage levels at the point of supply.

These agreements are prolific in the NWIS and the NSPs in the NWIS rely on this HTR clause (or similar clauses in their own Technical Rules) to deliver a high quality of supply to their LV customers.

Issue

Notwithstanding the good uses of this clause as described above, this clause in its current form enables an NSP to agree alternative voltage targets with a controller for a point on the network, that may change the fundamental voltage operating standard for that part of the network for all future connections.

It is inappropriate for an NSP to have this head of power in its current form:

- A more onerous (narrower) target voltage range at a connection point may, due to power system physics, spill over into a wider portion of the NSP's network, potentially creating barriers of entry for future connection applicants seeking to connect in the area.

- Any alternative voltage standards agreed under this clause would need to be accounted for in all future grid connection studies. This is expected to create significant administrative burden.
- The network performance standards of Chapter 2 comprise the Technical Envelope and are fundamental standards that should not be easily changed. Changes to the technical envelope for part of an NWIS network should be transparent.
- The clause in its current form could be used to lower the burden to connect for the first applicant to accommodate a technical limitation of its equipment and avoid an exemption, while at the same time increasing the burden to connect for a future applicant whose equipment or design may rely on the HTR's default voltage operating range.
- The clause does not require an NSP to consult with NSPs of neighbouring networks which may be impacted by the adjusted normal voltage operating range.

1.3 Issue 8 – Solution Options

Option 1 – Do nothing.

- The clause may be used to advantage first-mover connection applicants while increasing the burden to connect for future applicants seeking access in the same part of the network.

Option 2 – Amend HTR cl. 2.2.2(c) to address deficiencies of the clause and ensure transparency and coordination between NSPs:

- 1 Introduce a new subclause HTR 2.2.2(d) to clarify that any agreement made in reliance on clause 2.2.2(c) does not alleviate a user's obligations to meet the technical capability requirements for user facilities detailed in Section 3 of the HTR.
- 2 Introduce a new clause 2.2.2(e) to require an NSP who has made an agreement or otherwise maintains operational practises in reliance on clause 2.2.2(c), to notify the ISO of, and if the matter relates to a covered network, publish the details of the resultant voltage operating range, including at minimum, details of the new voltage range being operated and the network elements to which the new voltage range applies.

NOTE: The obligation to publish should apply to covered NSPs only as non-covered NSPs are not obliged to facilitate third-party access. Quality of supply arrangements for third parties on non-covered networks are managed through other mechanisms (e.g. state agreements, NQRS, bilateral contracts).

- 3 Introduce a new clause 2.2.2(f) requiring an NSP who is contemplating an agreement or operational practise in reliance on 2.2.2(c), before doing so, to consult with all registered NSPs that are directly connected to its network.

1.1 Issue 8 – Recommended Actions

Option 2 is recommended on the merits described above and with the following considerations:

- Operating MV systems at tighter control ranges to ensure delivery of LV voltage operating standards is widely practised in the NWIS. The clause is therefore an important tool to manage quality of supply for small-scale customers.
- The proposed amendments should ensure the clause is not used to advantage first movers and disadvantage future connections.
- The proposed amendments ensure proper coordination and collaboration between NSPs.

Issue I2025.4

Dear Working Group Member,

Please find below my suggestion wrt HTR 3.3.3.3(f) being issue 2025.4.

Existing HTR 3.3.3.3(f) wording:

“Post-fault reactive power of a power station with non-synchronous generating units

After fault clearing, the *power station* in which a *non-synchronous generating unit* is located must not absorb *reactive power* from the *transmission system* or the *distribution system*. Any pre-fault absorption of *reactive power* has to be terminated within 200 ms after clearing of the fault. The absorption is permitted to recommence, if required by the applicable *voltage* control strategy, after the postfault *voltages* stabilise for at least 60 seconds at an above nominal value.

{Note: This requirement is intended for under-*voltage* situations where a *generator* is potentially exacerbating the problem.}

When introduced in the Western Power Technical Rules for the SWIS it was prior to there being any meaningful impacts from inverter connected generators and it was targeted at induction generators. Induction generators inherently draw reactive power and have limited ability to control voltage and consequently generally only have adverse impacts on the system during and shortly after faults.

In the NWIS, the risk in complying to this 3.3.3.3(f) in the future is that the system may be weaker or have high capacitance (i.e. new lines coming in with significant charging current). In this circumstance, the facility voltage droop characteristic may require reactive power absorption to constrain voltages within the technical envelope. If the facility complied to 3.3.3.3(f), there would be a 60s period after a fault where the facility reactive power absorption would be restricted. This may result in unacceptable overvoltage conditions.

For modern inverter-based generators when operating in voltage droop mode, the voltage droop characteristic should result in:

- Reactive power absorption when POC voltage (V_{poc}) is above the voltage setpoint (V_{sp}) + any configured upper deadband (V_{db_up}), and
- Reactive power generation when POC voltage (V_{poc}) is below the voltage setpoint (V_{sp}) + any configured upper deadband (V_{db_up}),

except where:

- the inverters fault response threshold is crossed, in which case they typically will respond according to their own k-factor / current limit, and
- in this instance, the PPC will typically freeze its setpoint while inner loop (inverter) control is active.

Consequently, modern inverter-based generators typically have the ability to contribute positively towards system stability immediately following faults and should not necessarily be disconnected. The proposed wording for HTR 3.3.3.3(f) should include a requirement for inverter-based generators when operating in voltage droop mode such that:

“The *facility* will provide *reactive power* according to its voltage droop control and fault-ride through characteristics to maintain voltage at the *connection point*

within the *technical envelope*, except where the facility is subjected to off-nominal *frequency* and *voltage* excursions beyond the requirements for continuous uninterrupted operation”

This captures how both the inner loop and outer loop control systems will coordinate to support the voltage. The inner loop will typically respond based on voltage at the inverter terminals but the settings should have been configured to support connection point voltage.

I would appreciate your consideration and any feedback on the above suggestion. I will set up a meeting next week to discuss if necessary.

Should you have any queries or wish to discuss any matter please do not hesitate to contact me.

Cheers,

Neil Gibbney
BE MIEAust NPER

Issue I2025.5

Dear Working Group Member,

Please find below my suggestion wrt HTR Working Group Issue I2025.5 being potential ambiguity in the definition of a *generating unit* and *generating system*

Executive Summary

Further review of this issue suggests it may not be as significant as first thought but it may be appropriate to add an explanatory note in the HTR as outlined below.

Current Relevant Definitions

The HTR definition of **generating unit** “is defined in the *Pilbara networks rules*.”

The PNR definition of **Generating Unit** “Means the Generating Works which comprise the Equipment necessary and sufficient to function as a single Entity to generate electricity for injection at a Connection Point.”

Issue with definition of *generating unit* (vs *generating system* or *power station*)

The original concern regarding the definition of a *generating unit* arose from the uncertainty of whether multiple inverters operating in parallel (such as in a typical solar farm, BESS or wind farm) should be considered as a single *generating unit* or as a *generating system* or *power station* consisting of multiple *generating units*.

The HTR is written to require that many of the rules should apply to individual *generating units*. For example, each *generating unit*:

- must satisfy the relevant requirements for immunity to voltage excursions,
- must be fitted an *active power output controller*, such as a governor, and a *voltage regulator*,
- must be capable of continuous uninterrupted operation,
- must be subject to ramp rate limits,
- must have relevant protection systems,
- etc., etc., etc..

The HTR was written when large power stations typically consisted of a small number of large synchronous machines each of which was commissioned and tested as a single *generating unit*.

In the case of utility scale solar farms, BESS and wind farms there is often very many [say hundreds] of inverters connected in parallel each of which may be capable of meeting the requirements of a *generating unit*, but are typically configured with a central Power Plant Controller (PPC) which controls the Facility as a single integrated unit. There is consequently only one point at which frequency and voltage control is performed by a PPC typically at the *connection point*, and it has consequently become standard industry practice to perform commissioning and testing of these Facilities as if they were a single *generating unit*.

Changing the definition of a *generating unit* in the PNR is beyond the scope of the current HTR working Group, however closer review of the relevant definitions and clauses of the HTR suggests that change may not necessarily be required in either in the HTR or the PNR to support current practice, however an explanatory note in the HTR may be of value.

While some Previous Standards still refer to *generating systems*, this term is not referenced in the HTR and no change is required.

Proposal

The proposal is to add a note to the HTR definition of *generating unit* as follows:

“Note:

A *generating unit* may for example include:

- a single large synchronous machine with all associated equipment necessary to control active and reactive power, frequency and voltage at the machine terminals such that it may be operated and function as a single entity, or
- a large number of small inverter coupled generators connected together with a single controller and all associated equipment necessary to control active and reactive power, frequency and voltage at the *connection point* such that it may be operated and function as a single entity.

I would appreciate your consideration and any feedback on the above suggestion.

In the interest of keeping the ball rolling with EPWA I'll send this to them also, but if anyone wants to discuss the above I'll be only too happy to set up a meeting.

Should you have any queries or wish to discuss any matter please do not hesitate to contact me.

Cheers,

Neil Gibbney

BE MIEAust NPER