Department of Energy, Mines, Industry Regulation and Safety
Energy Policy WA
GOVERNMENT OF WESTERN AUSTRALIA

Meeting Agenda

Meeting Title:	Pilbara Advisory Committee (PAC)
Date:	Thursday 20 June 2024
Time:	9:30 AM – 11:00 AM
Location:	Online, via TEAMS

Item	Item	Responsibility	Type	Duration
1	Welcome and Agenda • Conflicts of interest • Competition Law	Chair	Noting	2 min
2	Meeting Apologies/Attendance	Chair	Noting	1 min
3	Minutes of Meeting 2024_04_18 Published 21 May 2024	Chair	Noting	1 min
4	Action Items	Chair	Noting	3 min
5	Pilbara Roundtable Debrief	Chair	Noting	20 min
6	EPNR Project Update	WG Chair	Discussion	60 min
7	General Business	Chair	Discussion	3 min
	Next meeting: 9:30 AM, 29 August 2024			

Please note, this meeting will be recorded.

Competition and Consumer Law Obligations

Members of the PAC (**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 PAC 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.

Department of Energy, Mines, Industry Regulation and Safety
Energy Policy WA
GOVERNMENT OF WESTERN AUSTRALIA

Minutes

Meeting Title:	Pilbara Advisory Committee (PAC)
Date:	18 April 2024
Time:	9:30 AM – 11:00 AM
Location:	Online, via TEAMS

Attendees	Class	Comment
Sally McMahon	Chair	
Summa McMahon	Independent System Operator (ISO)	Proxy for James Campbell-Everden
Anthony Ravi	Registered Network Service Provider (NSP)	
Momcilo Andric	Registered NSP	
Sandy Morgan	Registered NSP	
Neil Midolo	Excluded NSP	
Rebecca White	Excluded NSP	
Gabby Pracilio	Contestable Customer	
Sandra McInnes	Contestable Customer	
Analena Gilhome	Small-Use Consumer	
Rory Burn	Discretionary Rule Participant	
Bethwyn Cowcher	Discretionary Rule Participant	
Kristian Myhre	Discretionary Rule Participant	
Frances Hobday	ERA's Observer	
Noel Ryan	Minister Appointed Observer	

Also in Attendance	From	Comment
Dora Guzeleva	PAC Secretariat	
Thomas Marcinkowski	PAC Secretariat	
Tom Coates	PAC Secretariat	
Tim Robinson	RBP	

Apologies	From	Comment
James Campbell-Everden	ISO	Proxy attended

Item	Subject	Action
1	**Welcome** The Chair opened the meeting at 9:36am with an Acknowledgement of Country. The Chair noted her regular disclosure on her other roles held, including her recent appointment as a part-time Councillor at the National Competition Council. The Chair noted that the views or advice provided by the PAC to the Coordinator of Energy (Coordinator) do not necessarily represent the views of the independent Chair. The Chair advised that the PAC meeting was being recorded for the purpose of developing the minutes.	
2	**Meeting Apologies/Attendance** The Chair noted the attendance and apologies as listed above.	
3	**Competition Law Statement** The Chair noted the Competition Law Statement, reminded members of their obligations and encouraged them to bring any Competition Law issues to her attention as they may arise.	
4	**Minutes** **(a) Minutes of Meeting 2024_02_29** The PAC noted the minutes of the 29 February 2024 PAC meeting which were reviewed and approved out-of-session by the PAC.	
5	**Action Items** <u>Item 1/2024:</u> Ms Guzeleva confirmed that an updated Terms of Reference document was circulated to PAC members immediately before this meeting. The Chair requested that this Item be left open to provide members an opportunity to provide feedback on the revised Terms of Reference.	
6	**Evolution of the Pilbara Networks Rules (EPNR) Project Update** The Chair introduced this agenda item, noting that the Evolution of the Pilbara Networks Rules Working Group (EPNRWG) had met twice since the previous PAC meeting. The Chair invited Ms Guzeleva to lead discussion on this item.	

Ms Guzeleva outlined an intention to establish a practice in which a debrief is provided to the PAC on each of the EPNRWG meetings in the intervening period. Additionally, she noted that there is opportunity for PAC members to provide additional views.

Ms Guzeleva noted that the 28 March 2024 EPNRWG meeting focused on the project's Scope of Work, and discussions largely reflected those in the February PAC meeting.

Ms Guzeleva noted that the 15 April 2024 EPNRWG meeting focused on Stage 2 of the Project (the modelling exercise) with a particular focus on the modelling approach to scenarios.

Ms Guzeleva invited PAC members who attended the EPNRWG meetings to provide any reflections to the PAC.

- Ms White expressed her view that the EPNRWG meetings were going well. She advised that, in line with EPWA's request to the working group, BHP were developing feedback to provide in the following week.

Ms Guzeleva invited Mr Robinson to provide a summary of the 28 March 2024 Working Group meeting.

Mr Robinson provided an overview of the EPNR modelling approach, with reference to slides 4 and 5. He emphasised that the 2023 modelling used a least cost expansion model to provide infrastructure planning insights, while the EPNR modelling exercise will apply a dispatch model with hourly resolution to provide operational insights.

Mr Robinson outlined key assumptions underlying the modelling approach, and key insights expected from modelling outputs, with reference to slide 6.

Mr Robinson summarised working group discussions, with reference to slide 7. He reflected that discussions were focused on clarifications, and the working group members were generally comfortable with the modelling approach.

Mr Robinson invited comments or questions from members on the modelling approach.

- Ms Cowcher asked if the Government, through the roundtable process, had already formed a view that there were benefits from integration (through avoided build costs). She queried whether different regulatory settings may be required for legacy assets, compared with new builds. Further, Ms Cowcher noted that the unconstrained transmission assumption appears bold given known constraints (i.e. land access), and queried how accurate the modelling insights would be for generation profiles.

Mr Robinson reiterated that the focus of the modelling exercise was not to determine a generation or transmission build plan, but to examine the compatibility of the current PNR under different scenarios with various levels of demand and renewable generation penetration.

Mr Robinson acknowledged that the roundtable were supportive of an integrated approach to transmission development and build, and noted that the 'integration dimension' in the EPNR modelling exercise was

focused on the operation of transmission and generation projects once they are built.

Ms Guzeleva noted that there is a separate work program within EPWA that will refresh the 2023 modelling, focusing on transmission staging.

Ms Guzeleva re-iterated that the PAC is being asked to provide guidance on the evolution of PNR and whether it needs to be changed to accommodate the scenarios modelled.

Addressing the second aspect of the question posed, Ms Guzeleva noted it is unclear whether the current PNR regime is sustainable, and the various transitional arrangements under the PNR will also need to be revisited as part of the EPNR project.

Mr Robinson added that insights into the operation of legacy and new assets will be derived during the modelling of different levels of operational integration across scenarios.

Mr Robinson acknowledged the view expressed around the unconstrained transmission investment assumption. He noted that to explore potential benefits, the modelling needs to include all available load, and assume that all load will be served.

- Mr Ravi noted that the modeling is expected to identify efficiency gains that may flow from increasing levels of integration. Mr Ravi discussed the importance of developing an accurate base case (status quo), which ensures that the model measures the benefits of the existing regime appropriately and identifies whether decarbonisation objectives can be achieved.
- Mr Ravi further noted that the PNR is broader than energy flow considerations, and queried how the model would incorporate broader issues in the PNR. He asked if it would be worthwhile to clarify potential issues with the PNR in advance of the modelling exercise.

Ms Guzeleva answered that, in order to identify potential issues with the PNR, the hypothesis that the PNR is sustainable needs to be tested through the scenarios modelling.

Mr Robinson agreed that energy flow and essential system services, both of which are contemplated by the PNR, were built into the modelling. He asked Mr Ravi which other areas of the PNR should be specifically factored into the modelling exercise.

- Mr Ravi queried if the modelling would consider the access and connection processes, and whether energy balancing and settlement (EBAS) is working well.

Mr Robinson clarified that the modelling exercise is one aspect informing the detailed review of the PNR (Stage 3), not the only aspect.

Mr Robinson pointed to the list of issues that was prepared for the HTR workstream, which will consider some access and connection issues. He added that potential developments identified during the 2023 Pilbara Industry Roundtable discussions would be considered in Stage 3.

Ms Guzeleva added that the current Pilbara regime is based on the self-balancing of loads and supply, which is being tested by the modelling with increasing levels of renewable penetration. She noted that the objective is to test whether there are aspects of the PNR that need to be evolved.

- Mr Ravi noted that the modelling was an optimisation model around cost and questioned whether considerations of cost are the main driver for development of the NWIS.

Mr Robinson agreed that security and reliability were also paramount considerations, and noted that they need to be met in every scenario.

Ms Guzeleva noted that there may be future users of the Pilbara electricity system for whom costs are important and who might not connect to the system if costs are too high. She reiterated that the modelling will also test whether a scenario without integration is sustainable, irrespective of cost.

- Mr Andric emphasised the potential for significant economic loss associated with a loss of mining operations load in contrast to a residential load. He stated that that the modelling will need to reflect different reliability requirements for different parts of the network, accordingly. He further noted that the location of generation and load is relevant to reliability.

Mr Robinson clarified that location of generation is treated as less important than quantity in the context of new generation. He, however, reiterated that the model will take into account the location of the load, which is very important.

Mr Robinson agreed that the reliability standard, used as an input for the modelling exercise, will be important. He reflected on the discussion held with the working group that the modelling could define a single blanket approach for the whole network, or it could set different reliability standards for different parts of the network.

Ms Guzeleva noted that this project has a decarbonisation focus and that it may not be possible for new, largely renewable generation to be co-located with loads.

- Ms Morgan noted that generation location can impact reliability, particularly to the extent that it may form the largest credible contingency.
- Ms Morgan stated that the evolution of the PNR, is broader than potential 'market' changes. She noted that other aspects of the PNR that require changes will become apparent as the project continues (i.e. Stage 3 - detailed review of the PNR).
- Ms Morgan noted that the modelling forecasts should consider when sufficient load is connected to support the viability of any market mechanisms.

Mr Robinson summarised the discussion as follows:

- The evolution of the PNR is broader than the market and integration.

- Security, reliability and environmental considerations are important, not just overall cost to serve.
- Consideration of generation and load locations are relevant to maintenance of power system security and reliability.
- The possible integration assumed by the model should take into account both new and legacy assets.
- Unconstrained transmission investment comes at a cost which needs to be accounted for.

Members took the slides for the 15 April Meeting working group meeting as read.

Mr Robinson provided a brief summary of the meeting outcomes, with reference to slide 11, and invited feedback from members.

- Ms Morgan asked why demand projections in the 2023 Current Trajectories (CT) with Barriers scenario, which considers land access and availability, were not preferred for this exercise.

Mr Robinson noted that the CT demand projections used in the EPNR Project are similar to the CT with Barriers scenario. He added that the CT with Barriers scenario reflected a delay in electrification and building generation in the near term but quickly converged with the CT scenario afterwards. In that sense, the proposed demand projections reflect underlying demand.

- Ms Morgan noted that transmission build staging is likely to impact the timing of new loads, and that cost is important in this context.
- Ms White asked whether there was merit in modelling a mid-point level of integration noting that, while there is a benefit to a market-based framework, some market mechanisms have a high cost.

Ms Guzeleva noted that the focus of the modelling is to test the existing PNR and identify if there are any efficiencies in exploring and moving towards a higher level of integration.

Mr Robinson agreed that there may be benefit in modelling a mid-point level of integration to investigate if there are cost benefits of partial integration.

- Ms White asked if the modelling would capture the benefits more competition would have on pricing.

Mr Robinson clarified that the modelling tool is focused on cost to serve rather than competition.

- Mr Andric noted that the vertical axis on the slide 10 chart should refer to consumption in terawatts rather than demand.
- Mr Andric asked if minimum requirements for synchronous generation to coexist with renewables would be considered.

Mr Robinson agreed that system strength and inertia, in the context of adding renewables, is an important consideration for system security and reliability. He noted that this a current gap in the existing PNR, as

Item	Subject	Action
	there is no mechanism to establish minimum synchronous generation requirements. Ms Guzeleva cautioned regarding the use of language around 'synchronous generation' as system strength and inertia requirements may be met differently in the future. Mr Robinson noted that the final item for discussion was what reliability standards should be reflected in the modelling exercise. He added that the PNR and HTR do not currently define a reliability standard in a quantitative way. Mr Robinson invited PAC feedback on the reliability standard outside of the PAC meeting to assist the modelling assumptions. The Chair noted that the upcoming NEM reliability panel report, referenced on slide 13 was now available on the AEMC website, and the finding of that panel is that a change in the reliability standard for the NEM is not supported.	
	ACTION: Members to provide feedback on the reliability standard that should be reflected in the modelling, and whether there are parts of the network which require a higher standard than other parts, to EPWA (energymarkets@dmirs.wa.gov.au) by 23 May 2024.	**All**
7	**Harmonised Technical Rules Issues and Gaps List** Ms Guzeleva noted that the agenda paper included a comprehensive list of potential issues and gaps in the HTR, compiled from working group member submissions. She thanked the ISO for its assistance with collating this list. Ms Guzeleva explained that this list would be used at the next working group meeting (on 9 May 2024) to agree a scope of work for the HTR workstream and to start working on these issues. Ms Guzeleva invited members to provide feedback on the list. • Ms Morgan noted that two items on the list related to the PNR rather than the HTR and asked if those two issues would instead be addressed in Workstream 1. Ms Guzeleva clarified that the list included all issues raised by participants for completeness. She agreed that some issues on this list will be transferred to the PNR Workstream. Ms Guzeleva indicated that members may provide feedback through their members at the EPNRWG (if applicable) or directly to EPWA.	
	ACTION: Members to provide any feedback on the HTR Long List to EPWA (energymarkets@dmirs.wa.gov.au) by 25 April 2024.	**All**
8	**General Business** The Chair asked Members if there was any general business. • Ms Summa McMahon advertised that nominations for the ISO's ESS Cost Allocation Review Workshops are now open. She invited PAC	

Item	Subject	Action
	members to nominate by close of business 19 April 2024, by emailing submissions@pilbaraisoco.com.au • Mr Burns asked whether there was any link between the ESS Cost Allocation Workshop and the ISO's Draft Determination: Flexible Approach to Spinning Reserve ESS, which is currently open for public consultation. Ms McMahon outlined that the Draft Determination open for consultation is intended to inform the 2024-25 procurement process. The Cost Allocation Workshops have been initiated in recognition that the existing PNR is silent on how ESS costs are allocated to inverter-based generation. She noted that this is an imminent issue with near-term s entry of renewables into the system. The Chair suggested adding 30 minutes to future PAC meeting times so there could be more discussion of the issues by a greater number of people. The Chair noted that the next meeting will be held at 9:30am on 20 June 2024.	
	Action: Extend future PAC meetings by 30 minutes.	**EPWA**

The Chair closed the meeting.

The meeting closed at 11:09am.

Department of Energy, Mines, Industry Regulation and Safety
Energy Policy WA
GOVERNMENT OF WESTERN AUSTRALIA

Agenda Item 4: PAC Action Items

Pilbara Advisory Committee (PAC) Meeting 2024_06_20

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.

Item	Action	Responsibility	Meeting Arising	Status
1/2024	EPWA to amend the Term of Reference to reflect changes proposed by PAC members.	EPWA	2024_02_29	**Closed** EPWA updated the Term of Reference in accordance with the changes proposed by PAC members. Updated Term of Reference was provided to PAC members for noting with the papers for the PAC meeting of 18 April 2024.
3/2024	Members to provide feedback on the reliability standard that should be reflected in the EPNR modelling, and whether there are parts of the network which require a higher standard than other parts, to EPWA by 23 May 2024.	Members	2024_04_18	**Closed** Nil comments received.

Item	Action	Responsibility	Meeting Arising	Status
4/2024	Members to provide any feedback on the HTR Long List to EPWA by 25 April 2024.	Members	2024_04_18	**Closed** Nil comments received.
5/2024	Extend future PAC meetings by 30 minutes.	EPWA	2024_04_18	**Closed** Commencing from August, EPWA has extended scheduled meetings to 2 hours.

Note. Closed action items will be removed from this list once noted at a PAC meeting. Accordingly, the numbering of action items may not be sequential.

Department of Energy, Mines, Industry Regulation and Safety
Energy Policy WA
GOVERNMENT OF WESTERN AUSTRALIA

Agenda Item 6: Evolution of the Pilbara Network Rules (EPNR) Project Update

Pilbara Advisory Committee (PAC) Meeting 2024_06_20

1. Purpose

The purpose of this agenda item is to:

- provide an overview of the 9 May 2024 and 23 May 2024 EPNR Working Group meetings and feedback received; and
- update the PAC on the progress of the EPNR Project, including the prioritisation of a review of PNR governance arrangements.

2. Recommendation

That the PAC:

(1) notes the information provided in the PAC Presentation Slides (Attachment 1); and

(2) provides feedback on working group discussions to guide project delivery, including:

a. finalisation of approach to modelling scenarios; and

b. prioritisation and approach to reviewing governance arrangements.

3. Background

- At the first EPNR Working Group (Workstream 2 - HTR) meeting on 9 May 2024, working group members worked through a list of 46 issues and potential gaps in the Harmonised Technical Rules (HTR) that were identified by working group members. These issues were provided to the PAC at its 18 April 2024 meeting.
    - During the meeting, working group members agreed:
        - an indicative priority for each issue as high, moderate or low;
        - an estimate of effort involved (simple or substantive); and
        - the nominated Issue Leads to progress work on further examining the issues and developing options for working group consideration.
    - Draft meeting minutes (Attachment 2) are attached for information and an updated meeting workbook reflecting meeting outcomes (including issue prioritisation, estimated effort, and nominated Issue Leads and supports) will be published on the EPWA website once the minutes have been approved by the working group members.
- At the second EPNR Working Group (Workstream 1 - PNR) meeting on 23 May 2024, working group members discussed the scenario development approach and modelling assumptions to be used in the modelling activity.
    - The working group also discussed:
        - initial results from scenario 1A and 1C (see attached slides for definitions);

- issues raised to date for consideration in the next project stage (stage 3) – detailed review of the PNR; and
- EPWA's prioritisation of a review of PNR governance arrangements, including of the ISO's roles and responsibilities.

  - Draft meeting minutes (Attachment 3) are attached for information and will be published on the EPWA website once the minutes have been approved by the working group members.

- Attachment 1 provides an overview of key discussions at the two EPNR working group meetings in May, and further information on the next steps for the EPNR Project and working group meetings.

4. Next Steps

- The next EPNR Working Group (Workstream 1 - PNR) meeting is scheduled for 27 June 2024.
  - This meeting will discuss modelling outcomes from the finalised scenarios.
  - EPWA proposes to share the modelling results and seek PAC input out-of-session in July 2024.
- The next EPNR Working Group (Workstream 2 – HTR) meeting is scheduled for 11 July 2024.
  - This meeting will discuss options for issues categorised 'high priority and simple' and receive progress updates from Issue Leads for issues categorised 'high priority and substantive'.

5. Attachments

(1) 20 June 2024 PAC Presentation Slides

(2) Draft Minutes 9 May 2024 EPNR Working Group (HTR Workstream) meeting

(3) Draft Minutes 23 May 2024 EPNR Working Group (PNR Workstream) meeting

Government of **Western Australia**
Energy Policy WA

Pilbara Advisory Committee

EPNR Project Update

20 June 2024

Working together for a
brighter energy future.

1. Working Group (HTR Workstream) update

HTR working group

The HTR working group had its first meeting on 9 May.

Prior to the meeting, participants identified issues to be addressed in the HTR, and ISO and EPWA categorized the issues

In the meeting, the group worked through the list, identifying the importance and complexity of each issue, and assigning a lead and other interested parties to form a small sub-group.

Some issues were determined to be governance or process issues, and these have been tagged for addressing in the PNR workstream.

Two issues were identified as high priority with simple resolution, and proposals to address these will be discussed at the next workstream meeting:

- Updating voltage and frequency standards in accordance with proposed legislative changes
- Clarifying how the frequency deadband is calculated.

Designated leads for other issues will coordinate discussion with interested parties to identify options to address the issue, for discussion at the working group.

2. Working Group (PNR Workstream) update

PNR working group

The PNR working group held its second meeting on 23 May 2024.

The focus of the meeting was to review and provide feedback on the modelling scenarios approach and to discuss preliminary modelling insights from two scenarios (see subsequent slides), focused on changing demand and supply.

- The project team is now incorporating working group feedback, finalise scenarios and review scenario outputs.

An overview of the meeting, including working group discussions, is provided in the following slides:

I. Scenario Approach

II. Changing Demand

III. Changing Supply

IV. PNR Governance Review

The summary of working group discussions provided is EPWA's view and is not a formal record of the meeting.

The PAC is asked to note the information provided and provide feedback to guide the project team and working group:

- Finalise approach to modelling scenarios; and
- Prioritise and progress a review of governance arrangements.

I. Scenario Approach

Scenarios

We are modelling six scenarios.

Sectoral drivers:

- Reuse data from 2023 Pilbara Energy Transformation Assessment modelling
- Scenario 1x: CT - Current Trajectories
- Scenario 2x: CT+ - Current Trajectories + Loads (load from Strategic Industrial Areas and CCS facilities)

Level of integration:

- Scenario nA: Current practices (self-balancing)
- Scenario nB: Partial integration (centralised balancing service)
- Scenario nC: Full integration (efficient merit-order dispatch)

The 23 May 2024 Working group meeting discussed initial results from scenarios 1A and 1C.

		Level of Integration		
		A	**B**	**C**
Sectorial drivers	**1**	1A	1B	1C
	2	2A	2B	2C

Representing the scenarios in the model (1)

WEMSIM optimises dispatch across the entire power system based on cost minimisation with specified constraints. This is used in scenarios 1C and 2C.

Self-balancing (scenarios 1A and 2A) is currently modelled by restricting transmission build to force load to be met in each relevant part of the system.

We are currently extending the model to include additional constraints linking specific facilities to specific loads. This will allow approximation of a central balancing service (scenarios 1B and 2B), and may result in revisions to the approach to scenarios 1A and 2A.

Representing the scenarios in the model (2)

Objective function: Lowest overall cost to meet

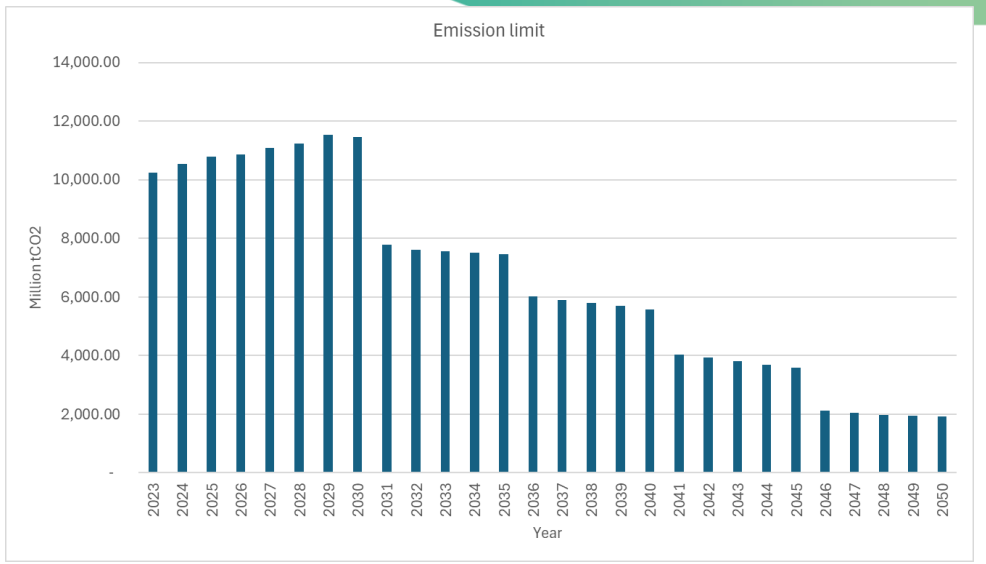
- Reliability (zero energy not served)
- Industry carbon emission targets

Costs

- Fixed & Variable Operation and Maintenance Cost
- Cost of new entry
- Supply cost (including fuel cost)

10% is added to temperature dependent load to approximate 10% POE demand

Transmission assumptions use specific scenarios from 2023 modelling.



Integration Scenario	Transmission	Capacity
A	Only existing and committed lines[1]	Local capacity added to meet 100% of local load
B	PETA "Current Trajectories – Semi Interconnected" transmission scenario[2]	Local capacity added to meet a proportion (TBC) of local load
C	PETA "Current Trajectories – Semi Interconnected" transmission scenario	Capacity added to meet system-wide load

[1] Sufficient to allow transfer of power within individual portfolios
[2] Sufficient to allow transfer of power from any supply to any demand

Working group discussion

The working group was concerned that scenario A, as defined, may not represent full use of the energy trading that the current PNR allow, and that it may be closer to scenario B in practice.

EPWA noted that while some energy sharing is provided for by the PNR, the key difference between the scenarios is the assumptions about capacity build. If participants individually build or contract sufficient *capacity* to serve their own peak load, more capacity is required than if capacity is efficiently built to meet the needs of the system.

To address working group feedback, EPWA will revise scenario A to include the same transmission build in scenarios A, B and C.

- The transmission build is a model input reflecting the transmission build from PETA modelling.
- It is noted, however, that in practice transmission build costs would vary between scenarios, and relate to the size and location of renewable generation capacity build required to meet the targets.

Results will be presented to the working group on 27 June.

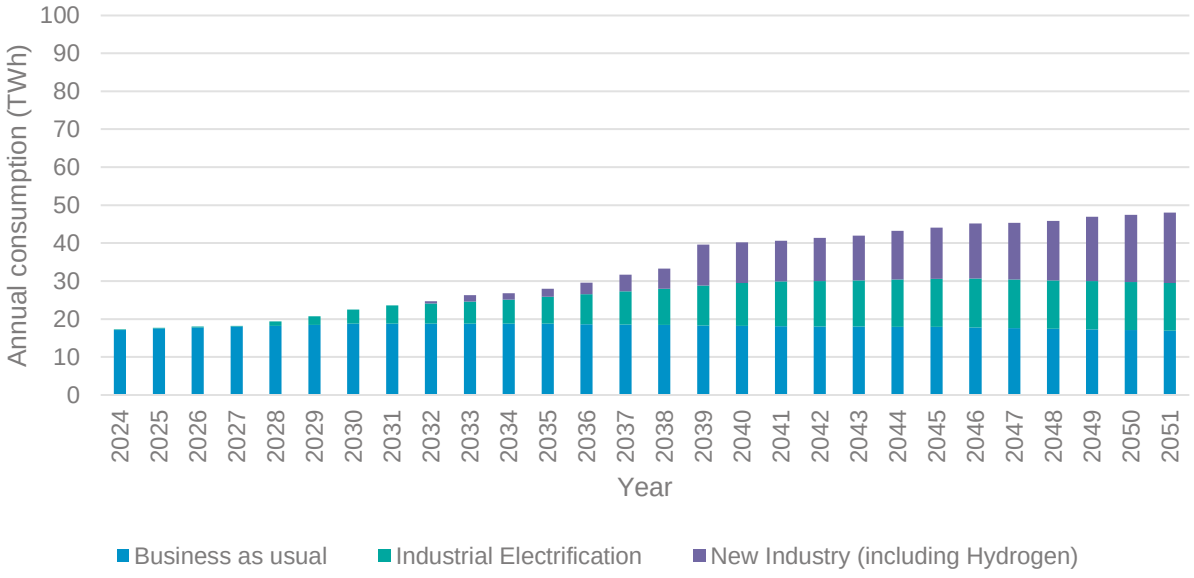
Does the PAC have any further comments on the scenario approach?

II. Changing Demand

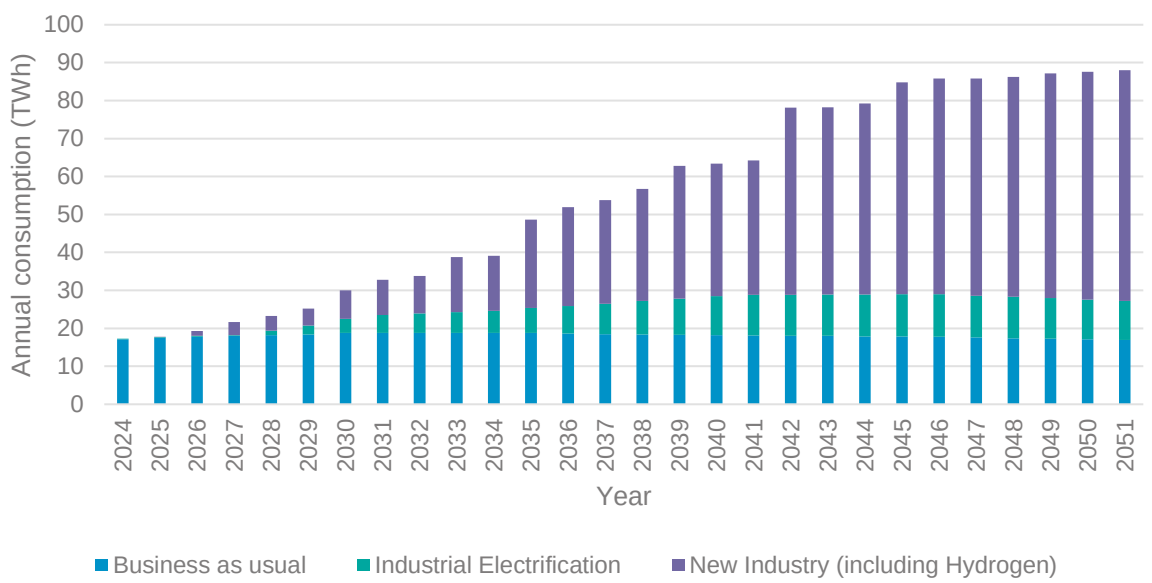
The type of load will change

Increasing volumes of non-vertically integrated demand, and potentially more flexible demand

Scenario 1 (CT)



Scenario 2 (CT+)

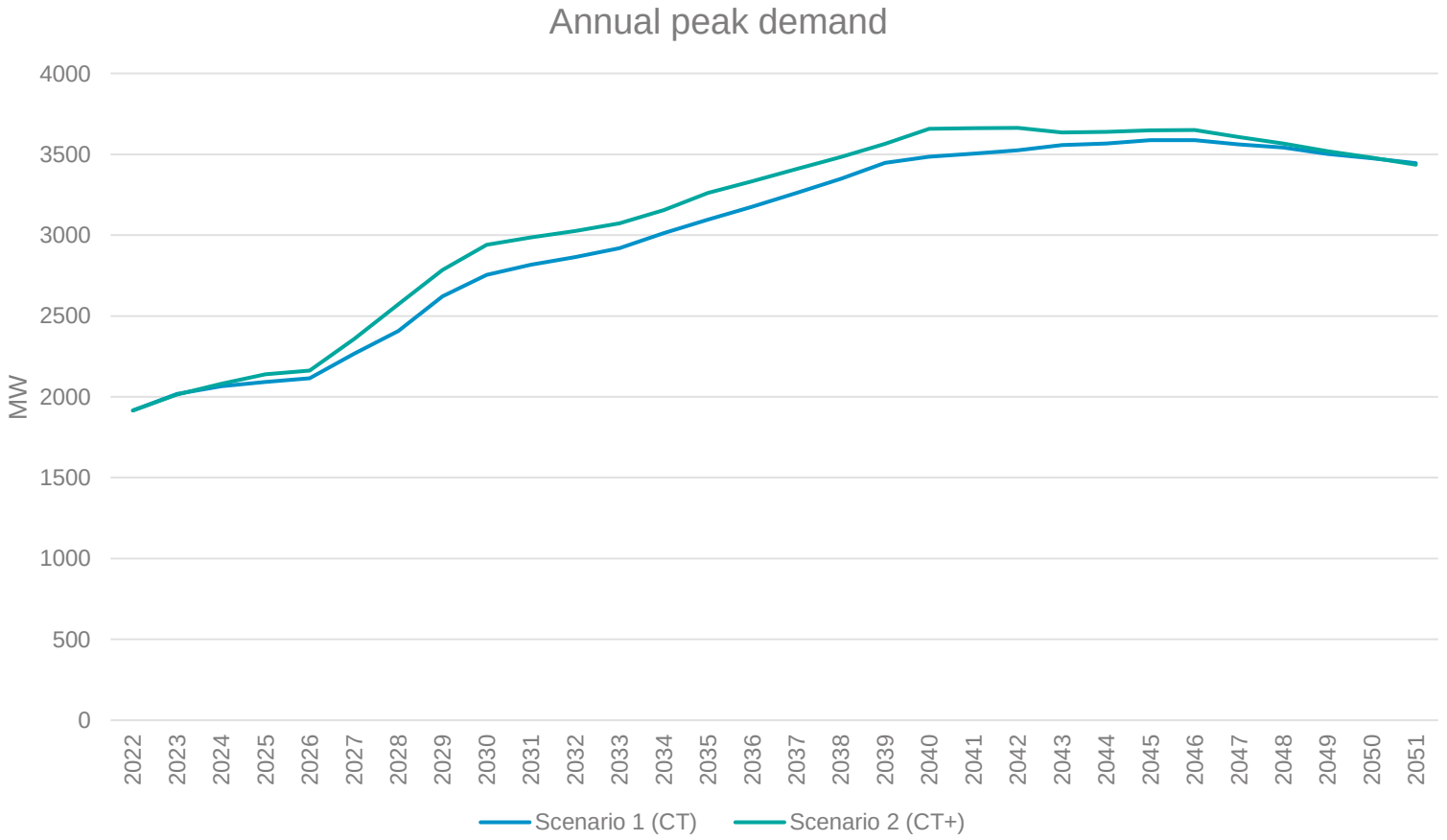


Input assumptions are drawn from PETA modelling. New load comes from:

- CT: industry announced plans for decarbonisation. Mine haulage electrification, onside electricity at LNG plants, growth of lithium mining sector. Modest hydrogen export consistent with AEMO Step Change scenario.
- CT+: a portion of potential new industrial demand at the Maitland, Boodarie, Ashburton strategic industrial areas. CCS facilities for emissions in LNG and chemical sectors.

The peak load will increase significantly…

Chart shows underlying operational peak demand excluding flexible load, for the whole modelled area.

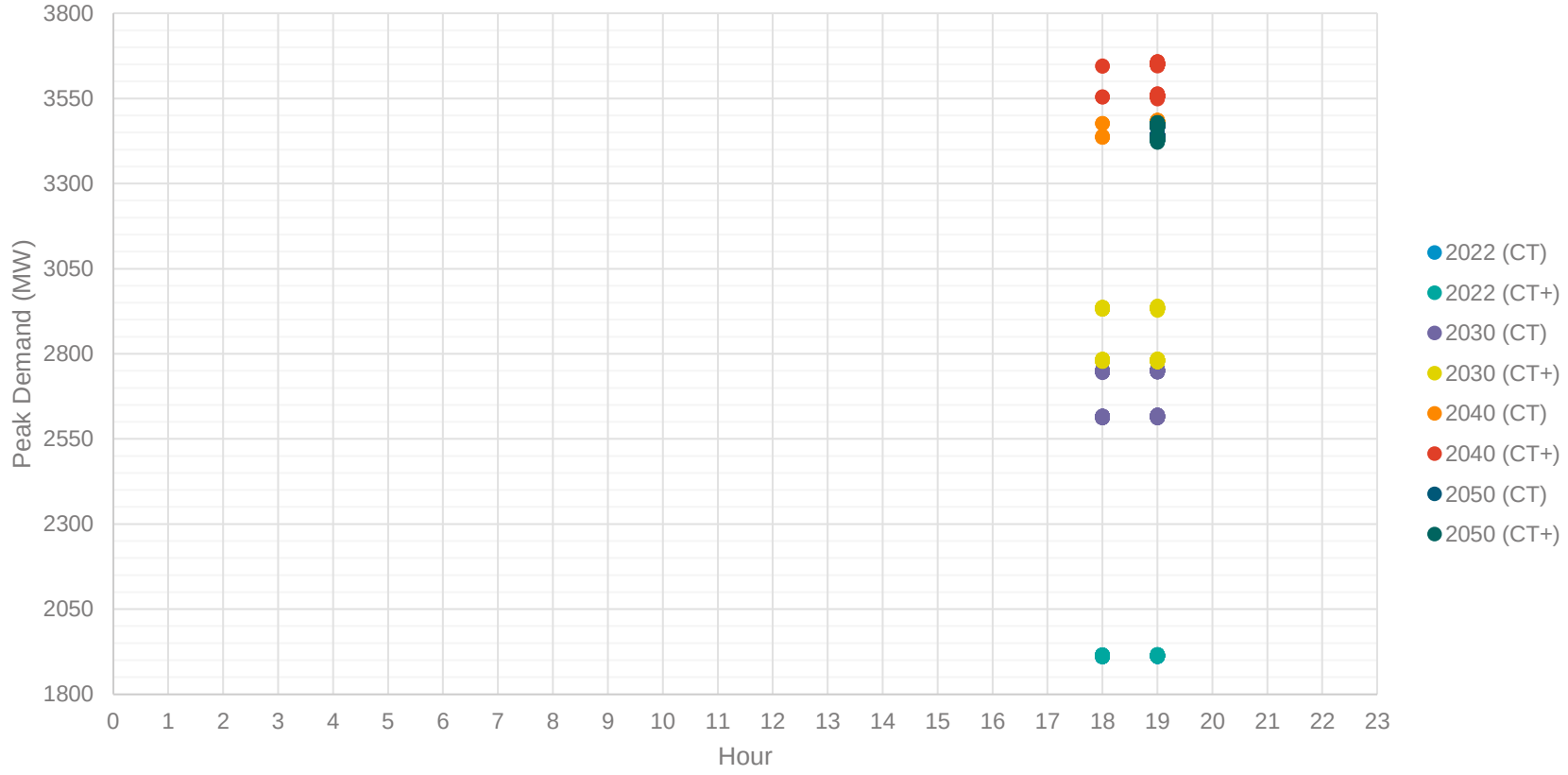


… but timing remains similar.

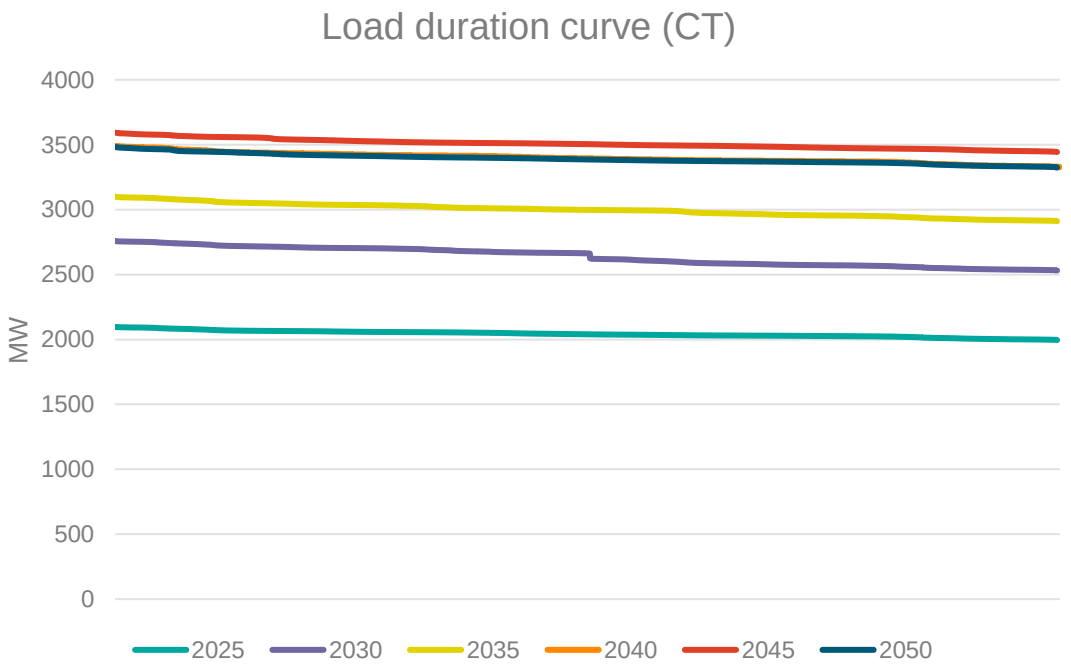
Minimal load volatility means minimal difference season to season.

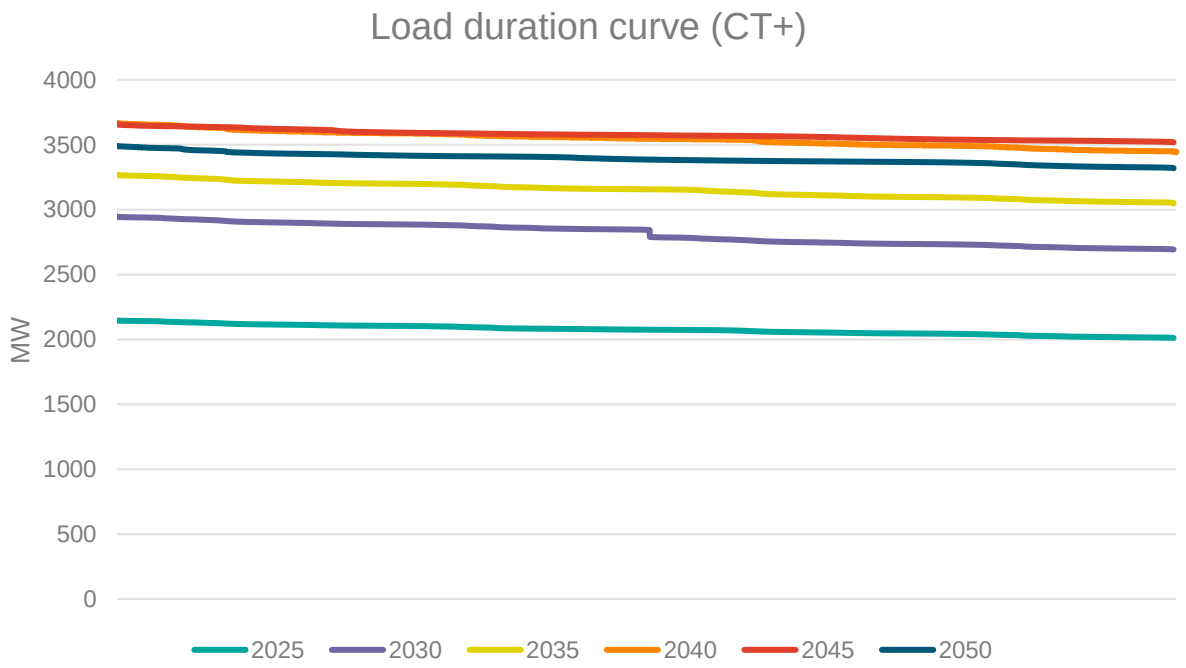
Timing of the peak remains in the early-mid evening.

Chart shows timing and magnitude of daily peak demands for selected years, for the whole study area.



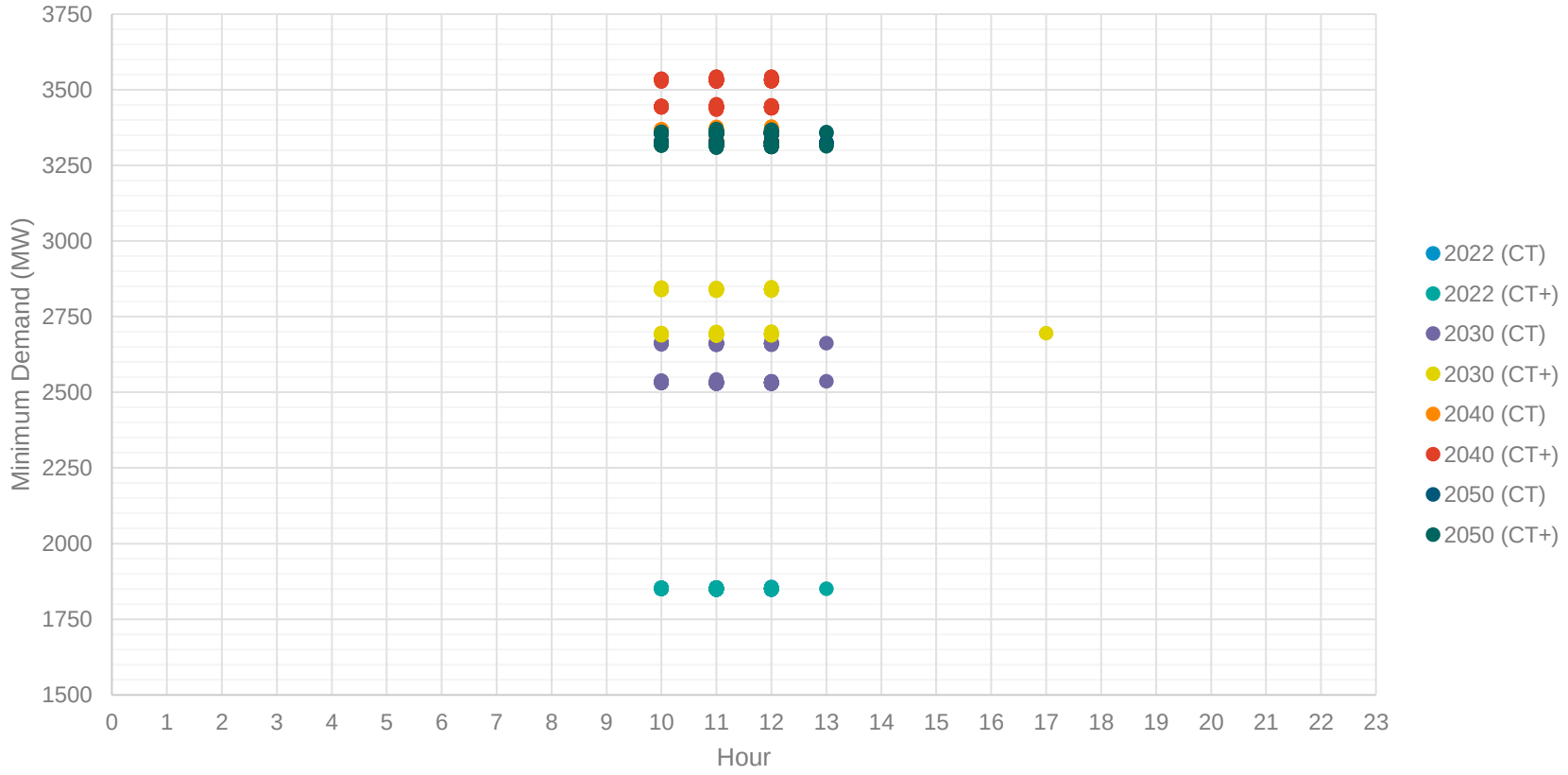
Underlying Load Duration Curve remains much flatter than other systems…





…so minimum demand is unlikely to be a problem

Chart shows timing and magnitude of daily minimum demands across the whole study area for selected years. The Pilbara has minimal temperature dependent load, and minimal uncontrolled non-utility scale solar, we do not see a “duck curve” in the underlying load.



Working group discussion

The working group:

- Agreed with the issues identified
- Recommended considering a sensitivity scenario with a lower bottom end to the load duration curve
- Considered that the existing demand would likely remain relatively inflexible.

Does the PAC have any other comments on the demand issues identified?

III. Changing Supply

Intermittent swing will require flexible support

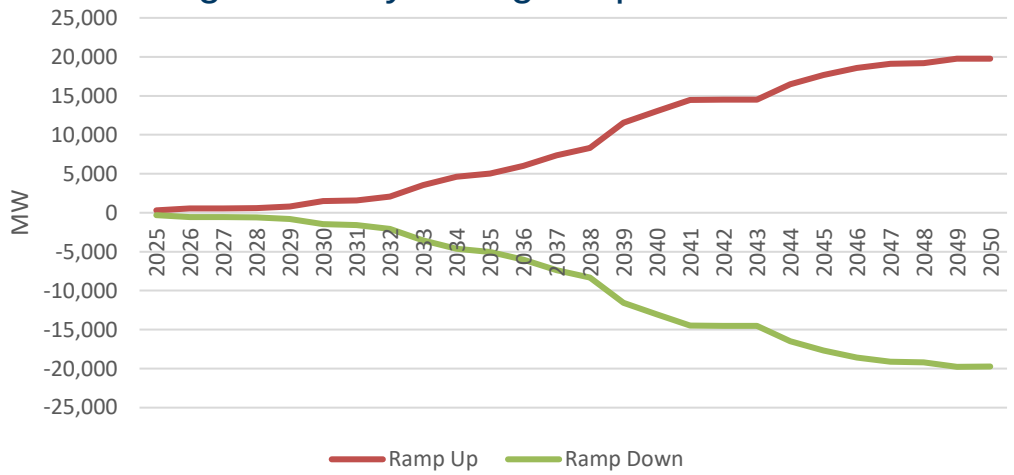
Even with minimal underlying demand volatility, the future system will face significant variability from grid connected generation.

The large solar fleet means a large, relatively predictable change in available generation in the mornings and evenings with the sun.

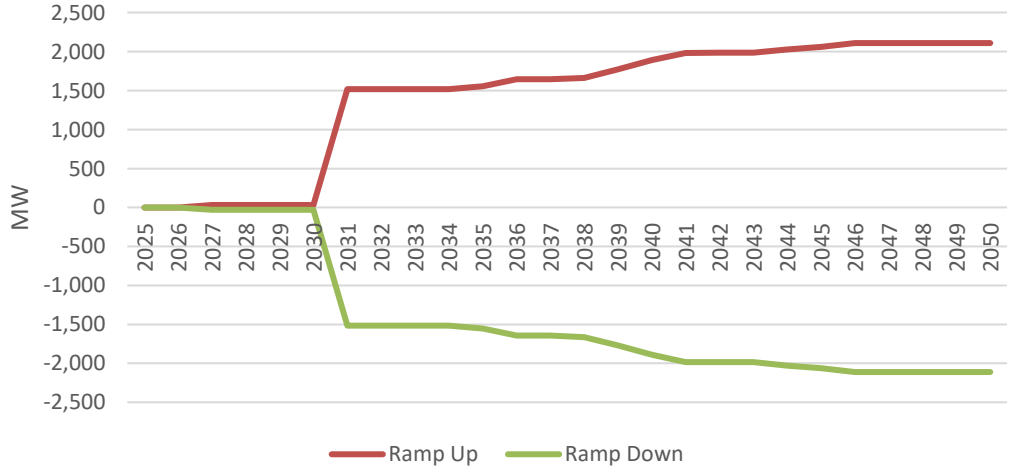
The wind fleet is smaller in size, but its output changes may be less predictable.

The charts show the size of the largest hourly change in potential (i.e. pre-curtailment) variable renewable output for each year of the modelling horizon in scenario 1C.

Largest hourly change in pre-curtailed solar output



Largest hourly change in pre-curtailed wind output



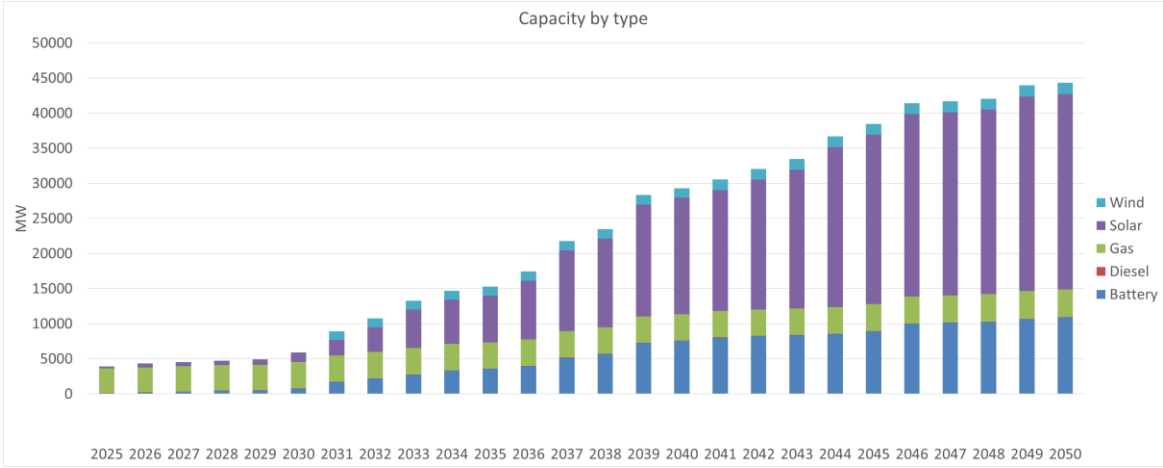
Capacity mix

In a high renewable future, significant overbuild is needed to account for the intermittent nature of the facilities, and carbon emission targets.

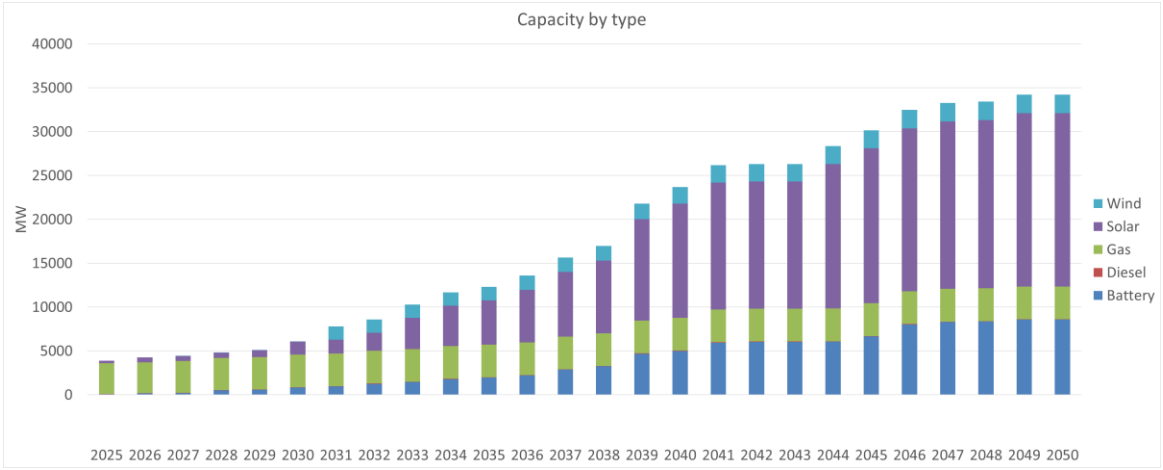
Storage forms an integral part of the mix to distribute intermittent capacity to other parts of the day.

Scenario 1A (non-integrated) requires around 30% more capacity than scenario 1C (fully integrated).

Scenario – 1A



Scenario – 1C

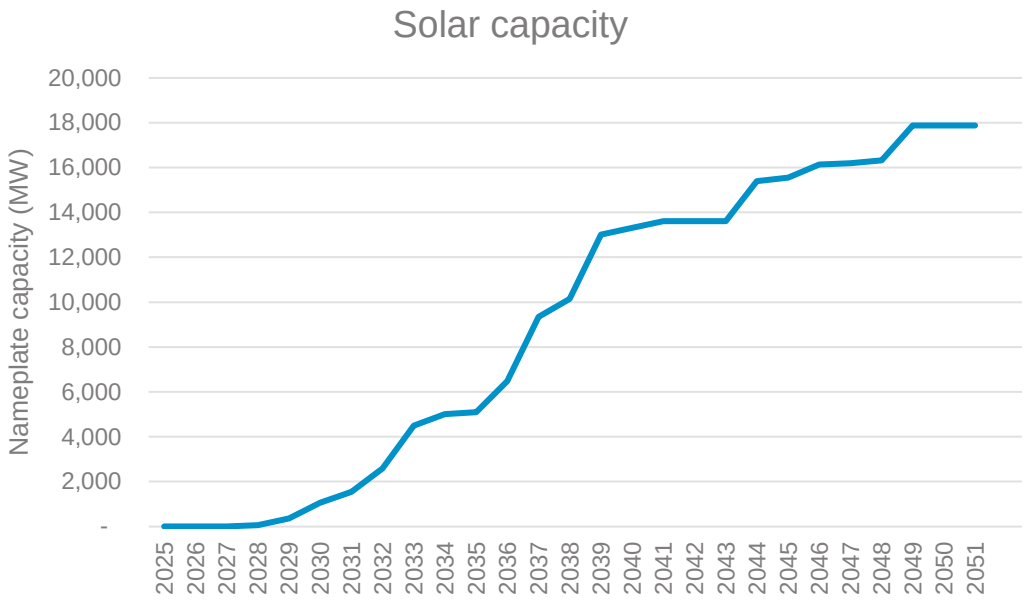


The largest contingency will be intermittent volatility

The largest credible contingency in the NWIS today is around 60MW.

In the future, the largest contingency on the system will be sudden loss of output from intermittent renewable facilities.

In the SWIS, over a half hour trading interval, unpredictable output changes have reached 20% of installed solar capacity.



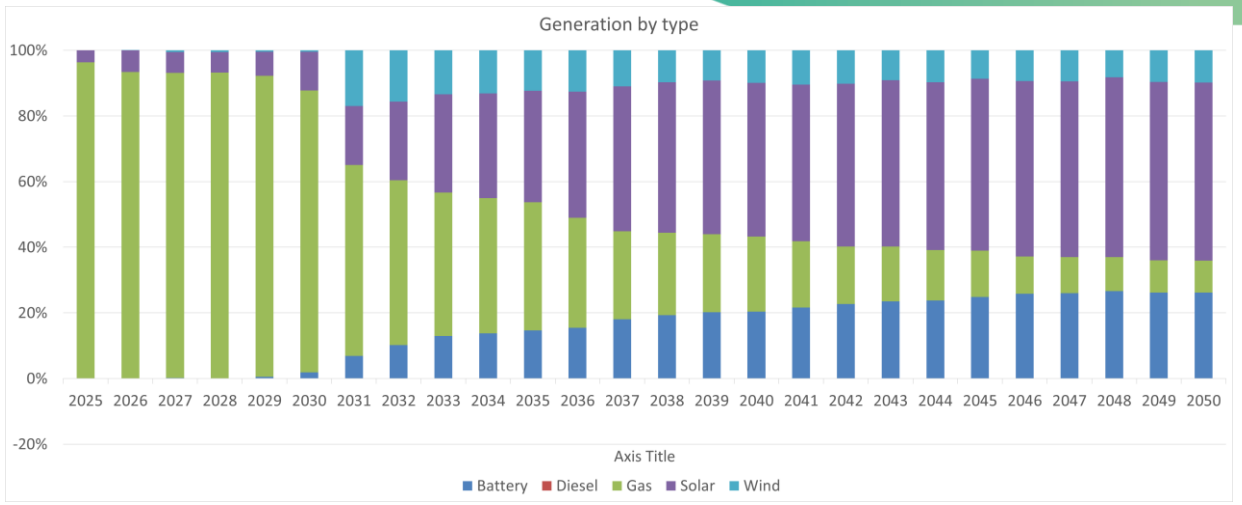
Generation mix

In both scenarios, thermal generation drops steadily to meet the assumed emission targets.

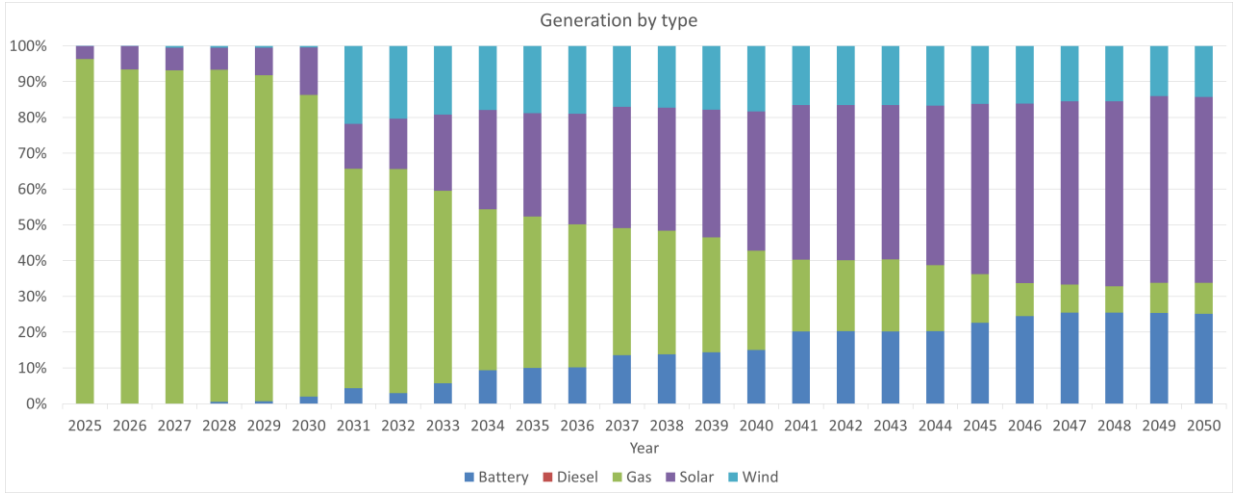
1A has more thermal generation because each party's load must be met by dedicated generation.

Since in 1C the new renewable resources can be shared, the system is less reliant on the thermal facilities.

Scenario – 1A



Scenario – 1C



Working group discussion

The working group:

- Asked about gas supply and transport limitations. The model does not include limits on gas supply, but can output gas usage so it can be compared with known limits.
- Were concerned that transmission costs be included in total costs for the scenarios in the final analysis
- Requested a copy of the output of the 2023 PETA modelling. EPWA has now provided this.

Does the PAC have any other comments on the demand issues identified?

IV. PNR Governance Review

Review of PNR Governance Arrangements

The Pilbara Networks Rules (PNR) establishes a significant role for the ISO.

Following stakeholder feedback raised during the Pilbara ISOCo's authorisation application to the ACCC, EPWA advised the working group on 23 May 2024 that it would prioritise a review of the governance framework of the PNR, including the Pilbara ISO governance.

The following slides outline EPWA's proposed approach to the review of the governance arrangements.

Review of PNR Governance Arrangements

What is meant by Governance, and how will it be assessed?

Defining Governance

Governance is a vague and widely-interpreted concept. For the purposes of this review, it has been defined to include:

- Corporate governance
- Roles and responsibilities
- Change management
- Compliance monitoring and risk mitigation
- Compliance enforcement
- Cost recovery mechanisms

Criteria for ‘Best Practice’ Governance

To guide and inform the review, a criteria will be developed to identify issues and inform the assessment of options:

- Cost-efficiency and effectiveness
- Quality and transparency of decision-making
- Independence (impartiality) and objectivity
- Clarity of roles and responsibilities
- Flexibility
- Effective mitigation of compliance risk (e.g. with competition law)
- Compliance by “design”

Review PNR Governance Arrangements

Timeframes and process

EPWA will progress the PNR Governance Review through the EPNR Working Group (PNR Workstream) as a priority

- EPWA will use the 27 June EPNRWG meeting to workshop a matrix that assesses current features of the governance arrangements against a ‘best practice’ criteria
- EPWA will use this matrix in subsequent EPNRWG meetings (in July and August) to identify and develop issue descriptions and assess initial options to address the issues

EPWA will provide an update to the PAC at its next meeting (11 August)

3. Next steps

Next steps

Complete Stage 2 Modelling (late June – early July)

Updated modelling outputs will be discussed with the EPNR Working Group (workstream 1) on 27 June

Updated modelling outputs may be shared with PAC out of session

Commence Stage 3 – PNR Review

Stage 3 will commence alongside finalisation of Stage 2 Modelling

Stage 3 will review issues identified and informed by modelling, previous Pilbara roundtable work, and HTR workstream

- The review will consider issues and identify potential PNR development options and where appropriate, select preferred options
- A review of PNR governance arrangements will be prioritised

Stage 3 development and delivery will include:

- 4-5 EPNR Working Group (PNR Workstream) meetings
- Public Consultation Paper (est. November)
- Information Paper (est. December)

We're working for Western Australia.

Minutes

Meeting Title:	Evolution of the Pilbara Networks Rules Working Group (Workstream 2 - HTR)
Date:	9 May 2024
Time:	9:30 AM – 11:30 AM
Location:	Online, via TEAMS

Attendees	Company	Comment
Dora Guzeleva	Chair, Energy Policy WA	
Nik Walker	APA	Proxy for Anthony Ravi
Njabulo Mlilo	BHP	
Rebecca White	BHP	
Lekshmi Jaya Mohan	BP	
Anthony Guevarra	CITIC Pacific Mining	
Melinda Anderson	Economic Regulation Authority	
David Stephens	Horizon Power	
Gemma Hamilton	ISOCo	
Timothy Edwards	Metro Power Company	
Noel Michelson	Rio Tinto	
Scott Hiscock	Woodside	
Shervin Fani	Woodside	
Rudi Strobel	Yindjibarndi Energy Corporation	
Tamara Brooker	Yindjibarndi Energy Corporation	
Brad Smart	Energy Policy WA	
Stephanie Hemsley	Energy Policy WA	
Thomas Marcinkowski	Energy Policy WA	
Tom Coates	Energy Policy WA	
Ajith Sreenivasan	RBP	
Eija Samson	RBP	
James Seidelin	RBP	
Tim Robinson	RBP	

Please note these are draft minutes that have not yet been endorsed by the members of the Evolution of the Pilbara Networks Rules Working Group.

Item	Subject	Action
1	**Welcome** The Chair opened the meeting with an Acknowledgement of Country.	
2	**Meeting Apologies and Attendance** The Chair noted the attendance as listed above.	
3	**Competition Law Statement and Agenda** The Chair noted the Competition Law Statement, and reminded members of their obligations and encouraged them to bring any Competition Law issues to her attention as they may arise. The Chair provided an overview of the meeting agenda and objectives.	
4	**Workshop on the 'HTR Long List'** The Chair introduced this Item with reference to the 'Overview' worksheet in the meeting workbook, emphasising the listed workshop outcomes. The Chair advised that the Harmonised Technical Rules (HTR) Long List had been presented to the Pilbara Advisory Committee (PAC) on 18 April 2024. The Chair noted that APA has recently provided a submission to Energy Policy WA (EPWA) outlining potential HTR issues and gaps. She noted that the APA submission has not been reflected in the consolidated long list, and instead invited APA to suggest amendments to the list during the meeting. The Chair invited comments or questions on the overview provided. • Mr Walker noted that any minimum technical standard for the Northwest Interconnected System (NWIS) needs to set expectations for customers as well as energy producing systems and network equipment, particularly in respect of dynamic voltage and frequency scenarios. • Mr Michelson asked if individual Network Service Providers (NSPs) were still expected to have their own technical rules if there was a minimum technical standard for all parties in the HTR. The Chair emphasised that the policy intent for the HTR is to provide a single, comprehensive set of minimum standards for all parties. She noted that it was standard practice that a user of network services could still negotiate different standards with an NSP in an access agreement. • Mr Stephens suggested that a negotiated alternative standard to the minimum standard should be provided for within the HTR, as is done with the non-reference service in the rules for the South-West Interconnected System (SWIS). • Members discussed how best to allocate resourcing to progress the issues in the list. There was agreement to allocate an Issue Lead for each individual issue with interested parties nominating to provide support. The Chair facilitated a discussion on Issues 1 to 46 in the 'Work Plan Under Development' worksheet in the meeting workbook. An updated copy of the workbook to reflect meeting outcomes was circulated and finalised with members on 21 May and will be published alongside these Minutes. Key highlights of discussions on Issues 1 to 46 included: • Members agreed to merge Issues 3 and 36, as it would be useful to determine the requirements for energy producing systems to ride	

through multiple consecutive power system disturbances and help consideration of a 'credible contingencies' definition.

- Members agreed that, where it was necessary to review definitions within the HTR, there might be precedents that can be drawn upon in the SWIS. In particular, the Chair suggested consideration of definitions being developed for the SWIS in the current Power System Security and Reliability (PSSR) Standards Review may be helpful.

Action: Circulate PSSR Standards Review materials to EPNRWG HTR workstream participants. **EPWA**

- Mr Stephens suggested testing how definitions from other instruments would work in the HTR before adopting them (such as definitions for recovery times and frequency bands), rather than accepting those definitions wholesale.
- Members agreed that Issues 3 and 36 can be merged.
- Mr Stephens noted that Issue 5 was substantive and modelling would be required to address it. He suggested that the first step should be to develop a scope for the modelling rather than developing options.
- Mr Fani (with reference to a review of the target frequency recovery times proposed in Issue 5) noted that some equipment that was previously islanded is very old and may not be able to withstand wider variations.
- Members agreed that Issues 5, 12, 15, 17, 19 and 34 can be merged and addressed collectively as they all require complementary modelling and studies.
- Mr Stephens commented on Issue 8 that the concept of considering Battery Energy Storage Systems (BESS) a load when charging and a generator when dispatched could be improved upon, including the introduction of specific requirements.
- Ms Mohan noted that the Kwinana BESS in the SWIS has highlighted several issues that may not be covered in the WEM Rules in respect of the treatment of BESS.
- Members agreed that Issues 8, 9 and 12 can be merged.
- Mr Stephens suggested (with reference to aspects of Issue 13) that there may be an opportunity to address HTR gaps by leveraging existing provisions within NSP's own technical rules.
- Members agreed with a suggestion by the Chair that, as a principle, if any issue in the list was already addressed by an NSP's existing technical rules, the working group should explore whether, and to what extent, that technical rule can be introduced into the HTR.
- Members agreed that Issues 13 and 37 can be merged.
- Mr Stephens and Ms Mohan agreed that there is a modelling and analysis component to Issue 16 and suggested that a modelling scope will be required.
- Mr Stephens suggested that Issue 18 may not require further studies, as some other issues, and may be categorised as a simple rather than substantive issue.
- Mr Stephens suggested that Issue 20 should be reviewed in the governance workstream at first but may need to return to this workstream to develop supporting technical requirements in the HTR.

Item	Subject	Action
	• Members similarly agreed that Issue 21 should commence in the governance workstream but may return to this workstream. • Mr Walker suggested that Issue 23 be treated as a substantive issue, noting that requirements for reactive power capability vary based upon technology. He noted that there is a greater obligation, and therefore capital cost, for synchronous generation. • Mr Stephens suggested that the working group would benefit from a briefing on how BESS is treated in WEM to inform the consideration of Issue 23. • Members agreed to merge Issues 24 and 25 and discussed leveraging the PSSR Standards Review and Appendix 12 of the WEM Rules (respectively) to assist in developing outcomes for both issues. • Mr Stephens suggested categorising Issue 26 as a technical issue rather than a governance issue as it is more concerned with requirements, rather than actual monitoring for compliance. • Mr Stephens suggested that Issue 28 should be a high priority as fault levels have already been rising on both networks in the Dampier area because of extra generation being added. He also suggested that Issue 28 is a substantive issue because, at interconnection points between network operators, it is not easy to determine who is responsible for managing fault levels or what the minimum standards were for fault level management. • Mr Fani suggested that Issue 30 is a high priority as the HTR needs to be updated to reflect what is already in the PNR. • Mr Stephens noted the potential for Issue 31 to be a relatively 'simple' issue and should be categorised as a technical issue. He suggested that the issue may be addressed in the short term with derogations, but ultimately, a long-term solution may require modelling. • Members agreed to merge Issues 32 and 33. • Members sought clarification on the description, rationale and justification of Issue 35 (relating to requirements on NSPs to enact special protection schemes to manage network congestion and instability). • Mr Mlilo suggested that Issue 35 was a network planning issue that may require modelling. • Mr Mlilo agreed with the Chair's suggestion that Issue 35 should be categorised as a technical issue (rather than governance). • Mr Fani queried whether the periodic testing obligation proposed in Issue 38 would be appropriate for older plants which are always operated in the same way unless they are subject to a material change and requested further justification of the issue, before work on the issue is progressed. The Chair requested the Issue Lead (Mr Mlilo) to develop further clarity on issue definition, rationale and justification for Issues 35 and 38, and to report back at the next workstream meeting. **Action: Issue Lead (for Issues 35 and 38) to elaborate on issue definition, rationale and justification for discussion at the 11 July 2024 EPNRWG meeting.**	**BHP**
	• Members agreed Issue 38 should be categorised as a technical issue.	

Item	Subject	Action
	The Chair suggested that Issue 39 ('alignment of HTR with SWIS and other networks'), to the extent that it is practicable to do so, be adopted as a guiding principle, rather than a discreet issue. • Members agreed to merge Issues 41 and 42.	
8	**Next Steps** The Chair advised that EPWA would update the workbook to reflect meeting outcomes and circulate to members. The Chair requested that members review the updated workbook and nominate any Issue they would like to be involved in as a support to the Issue Lead. The Chair requested Issue Leads for 'high priority, simple issues' develop options or proposals for consideration at the next workstream meeting. The Chair requested that Issue Leads for 'high priority, substantive issues' provide a progress report at the next workstream meeting.	
	Action: EPWA to update the workbook to reflect meeting outcomes and circulate to members by close of business Friday 10 May 2024.	**EPWA**
	Action: Members to review the updated workbook and provide feedback (including nominations to support Issue Leads) by close of business Tuesday 14 May 2024.	**All**
	Action: Issue Leads for high priority simple issues (Issues 4 and 18), to develop options or proposals for resolving the issues and present those to the next HTR workstream meeting on 11 July 2024. Supporting meeting materials should be provided to EPWA by close of business 1 July 2024.	**Issue Leads**
	Action: Issue Leads for high priority substantive issues to provide a progress report outlining potential solutions or, where relevant, further scoping of the issue at the 11 July 2024 HTR workstream meeting. Supporting meeting materials should be provided to EPWA by close of business 1 July 2024.	**Issue Leads**
	The Chair closed the meeting.	

The meeting closed at 11:39am.

Minutes

Meeting Title:	Evolution of the Pilbara Network Rules Working Group
Date:	23 May 2024
Time:	9:30 AM – 11:30 AM
Location:	Online, via TEAMS

Attendees	Company	Comment
Dora Guzeleva	Chair, Energy Policy WA	
Rebecca Mason	APA	
Nathan Kirby	BHP	
Quentin Jeay	BHP	
Lekshmi Jaya Mohan	BP	
Anthony Guevarra	CITIC Pacific Mining	
Melinda Anderson	Economic Regulation Authority	
Guy Tan	Horizon Power – Pilbara Network	
Jaden Williamson	Horizon Power – Pilbara Network	
Summa McMahon	ISOCo	
Noel Michelson	Rio Tinto	
Reece Tonkin	Woodside Energy	
Rory Burn	Woodside Energy	
Rudi Strobel	Yindjibarndi Energy Corporation	
Chris McKay	Energy Policy WA	
Stephanie Hemsley	Energy Policy WA	
Thomas Marcinkowski	Energy Policy WA	
Tom Coates	Energy Policy WA	
Ajith Viswanath Sreenivasan	RBP	
Eija Samson	RBP	
James Seidelin	RBP	
Richard Bowmaker	RBP	
Tim Robinson	RBP	

Please note these are draft minutes that have not yet been endorsed by the members of the Evolution of the Pilbara Networks Rules Working Group.

Item	Subject	Action
1	**Welcome** The Chair opened the meeting with an Acknowledgement of Country.	
2	**Meeting Apologies and Attendance** The Chair noted the attendance and apologies as listed above.	
3	**Competition Law Statement and Agenda** The Chair noted the Competition Law Statement, reminded members of their obligations and encouraged them to bring any Competition Law issues to her attention as they may arise. The Chair presented the meeting agenda and objectives.	
4	**Action Items** The Chair noted that action item 1 has been closed. The National Energy Market (NEM) Reliability Review report was emailed to the working group on 1 May 2024.	
5	**Scenario Approach** Mr Robinson provided an oveview of the scenario modelling approach with reference to slides 4-6 and made the following key points: • During the Pilbara Advisory Committee (PAC) meeting on 18 April 2024, members identified the need for modelling a middle scenario that explores partial integration (Scenario nB). • Due to missing data, which has now been obtained, it has taken longer than anticipated to model Scenario A as originally intended. As a result, Scenario A has been modified to restrict which generators can serve which loads and allow for optimisation across all the generators in the connected areas. Mr Robinson invited comments from the working group. • Mr Williamson sought clarification on the purpose of Scenario A, particularly in comparing modelling results. Mr Robinson confirmed that Scenario A was intended to reflect the existing Pilbara Network Rules (PNR) mechanisms and emphasised the benefit of discussing how the modelling approach can be adjusted to better represent a particular future. • Mr Williamson queried the modelling restrictions on transmission infrastructure build in Scenario A. He explained that this approach, will likely result in a situation in which there is no effective sharing of generation capacity. In Scenario C, however, different aspects are being tested to model the full benefits of a market. The Chair asked Mr Williamson which mechanisms in the PNR he believes are not represented in Scenario A. • Mr Williamson clarified that his point was in relation to comments regarding limited Essential System Services (ESS). He explained that, currently, as islanded systems connect, entities share the regulation and spinning reserve services to the extent that the transmission connection can support it. • Mr Williamson also highlighted the risk of understating the potential efficiency of the current PNR mechanisms by limiting how much capacity is allowed to flow between modelled demand nodes in Scenario A.	

Item	Subject	Action

Mr Robinson highlighted that a key purpose of the modelling is to provide insights in the most efficient use of generation on the system. He asked Mr Williamson if he perceived the current PNR as capable of facilitating the most efficient use of generation.

- Mr Williamson stated that, while it may not lead to the most efficient outcome, this would be more efficient when compared to energy users self-supplying. He acknowledged that there are factors within Chapter 6 of the PNR that are unsatisfactory and may produce inefficient outcomes, noting that there are mechanisms in place now which offer some relief.
- Mr Williamson reiterated his primary concern that presenting Scenario A (as presently modelled) may lead to overestimating the benefits of moving to something else.

The Chair emphasised that the key difference between Scenario A and Scenarios B and C is that in Scenario A users must meet their own load, causing balancing energy to not be shared efficiently. She asked Mr Williamson to clarify what changes he would suggest to the modelling of Scenario A.

- Mr Williamson suggested that parties should still have an obligation to meet their own load. However, the generation sources they use to achieve this are broadened if they have greater access to other generation on the system, as opposed to being restricted to sources located in their area and existing 'skinny' connections.

Mr Robinson acknowledged that the quantity of capacity (fixed costs) will impact the efficiency of a scenario's output but reiterated that the modelling will provide broader insights including operating costs (variable costs). He highlighted that a key modelling output is the level of efficiency under each scenario.

Mr Robinson suggested that there are areas within Chapter 6 of the PNR (capacity adequacy) that don't require modelling to reveal their inadequacy with high penetration of renewables.

- Mr Williamson agreed that the capacity allocation mechanism would not result in the most efficient outcomes, particularly when renewables increase.

Mr Robinson acknowledged the points raised and asked Mr Williamson how Scenario A could be amended to address the concerns raised.

- Mr Williamson highlighted the challenges in assuming future interconnection in the modelling, reflecting that users who are not connected cannot take advantage of these until they are connected to the North West Interconnected System (NWIS).
- Mr Jeay asked if gas transmission constraints would be considered in the modelling.

Mr Robinson explained that gas transmission constraints are not considered in the modelling, but noted that comparisons between generation facilities gas usage and capacity could be made. He highlighted that new gas-fired facilities are not being developed in the Pilbara and there are further constraints to reduce gas-fired generation overtime.

6 **Changing Demand**

Mr Robinson presented demand-related modelling assumptions and initial results, slides 8-12.

Mr Robinson invited comments on the load duration curve graphs on slide 11 and the variations between the peak and minimum load.

- Mr Tan noted that the load duration curves are very flat, and suggested that significantly more variation will occur than what is being presented. He

Item	Subject	Action
	proposed modelling a 50% drop in peak load, highlighting the need to capture variations such as those, caused by time of day and weather. Mr Robinson indicated that further data would be helpful to better capture potential issues and contingencies, and analyse variations between the peak and minimum load. He committed to discussing this further with the Independent System Operator (ISO). **ACTION ITEM: RBP to discuss the availability of data and/or insights relevant to the load duration curve with the ISO.** • Mr Tonkin suggested considering the potential impacts of an increase in the number of embedded generation facilities connected to the NWIS. He explained that variation in embedded generation output, due to high temperatures and other factors, will have a corresponding impact on operating load. • Ms Mason highlighted the importance of recognising the uniqueness of the NWIS and its distinct load profiles when compared to other energy markets. The Chair noted that the load presented in slide 11 is significantly flatter than that experienced in the South West Interconnected System (SWIS). She also noted that the scenario modelling is driven by the fact that the generation mix will change and asked whether the modelling should assume that load would also respond to signals over time. Mr Robinson added that the graph on slide 9 excludes flexible loads. He noted (with reference to slide 8) that a portion of 'New Industry (including hydrogen)' component of demand is treated as potentially flexible loads. He explained that, for modelling purposes, it is assumed that all other loads are not necessarily flexible. Mr Robinson emphasised that the difference between peak and minimum load in the Pilbara (as illustrated in slide 12 graph) is not an ongoing systemic issue and, therefore, does not need to be resolved through new PNR mechanisms.	**RBP**
7	**Changing Supply** Mr Robinson presented supply-related modelling assumptions and initial results from Scenarios 1A and 1C, slides 14-17. He invited comments from the working group. • Ms Mason sought clarification on how generation mix interplays with the capacity mix. Mr Robinson clarified that firming generation is included in the later years to cover variability when there is no renewable output. He explained that without an emissions constraint, there would be a reduced amount of renewable resources. He added that, unlike Scenario A, constraints in Scenario C are not binding, resulting in more renewable usage in Scenario C. • Ms Mason asked whether the modelling considers the location, transmission infrastructure requirements, and costs associated with introducing renewable resources. Mr Robinson advised that these considerations, and associated findings, will be analysed during the final set of outcomes. • Ms Mason emphasised a need to consider the cost impacts of renewable resources, noting the unique characteristics and load profiles of the NWIS, and the critical importance of supply reliability. She added that the overbuilding of renewables may not be in the interests of key energy users in the NWIS. Mr Robinson noted the alternatives to overbuilding renewables for maintaining reliability (storage, gas generation and unserved demand), and noted that	

Item	Subject	Action

some of these options are not supported in the modelling due to the industry emission reduction targets. He agreed that consumers' acceptance of the potential reliability and cost implications are a key driver for overbuilding renewables.

- Ms Mason suggested modelling an additional scenario which explores the impact of sensitivities and levels of flexible demand.

Mr Robinson acknowledged Ms Mason's suggestion.

8 Other matters for PNR Review (Stage 3)

Mr Robinson listed the issues identified during the preceding Harmonised Technical Rules (HTR) and PNR workstream meetings (slides 19 and 20).

- Mr Williamson highlighted that options to address these issues may involve different mechanisms (i.e. the PNR, HTR and other instruments).

The Chair acknowledged this view and advised that another workstream is working in parallel (but slightly behind the PNR workstream) to examine the Pilbara Networks Access Code.

The Chair emphasised the importance of the governance work. She acknowledged stakeholder feedback raised during the ISO's ACCC application process and advised that a review of the governance arrangements in the PNR will be prioritised in the work program.

Mr Robinson invited members to raise other issues (not necessarily informed by the modelling) that should be taken into account in stage 3 of the project.

- Mr Williamson suggested examining work completed during the Pilbara Roundtable process in 2023.

Mr Robinson agreed and noted that work conducted by the Pilbara Roundtable has, and will continue to, inform this project.

- Mr Williamson also suggested reviewing certain roles and responsibilities of Network Service Providers (NSPs). He noted that the PNR is a bit inconsistent as a result of attempting to marry up the responsibilities of an NSP, who manages third-party access, versus the responsibilities of an NSP, who is vertically integrated.
- Ms Mason requested access to the 2023 Pilbara Energy Transformation Assessment Stakeholder Report (PETA report).

The Chair advised that this document is not publicly available yet, but that Energy Policy WA would circulate it as soon as possible.

- Ms Mason asked if the results presented in this meeting will inform the PNR evaluation, or if there will be another modelling exercise and analysis.

Mr Robinson clarified that, at a high level, the results presented in this meeting will highlight issues that the system will need to address in the future. With this information, the working group will examine the current PNR to assess whether its mechanisms are able to address these issues.

Mr Robinson noted that the modelling also aims to examine the efficiency benefits of varying levels of integration and, thus, should involve a cost analysis. He added that the modelling will also inform the evolution of the PNR in respect to how issues should be addressed (i.e. through the PNR, or through other mechanisms such as cost allocation mechanisms or a form of dispatch).

- Ms Mason asked if transmission costs will be modelled and associated results presented in the next meeting. She questioned the merit of building transmission lines and highlighted the importance of examining the costs and benefit of building transmission.

Item	Subject	Action
	Mr Robinson advised that the results will include transmission cost estimates but reiterated that this modelling activity adopts transmission assumptions from the PETA report, and is not focused on producing new transmission scenarios. The Chair noted that - unlike the transmission assumptions adopted - actual transmission infrastructure requirements and costs would be dependent on the location of the load and renewable resources. • Ms Mason reiterated the importance of considering the cost and benefits of building transmission infrastructure, maintaining a graduated approach, and establishing what 'fit for purpose' means. • Through the meeting chat, Mr Strobel proposed to consider weather events in stage 3, particularly regarding reliability and renewable and gas generation profiles. He explained that his point relates to the earlier discussions surrounding projected generation mix and related sensitivity analysis. • Mr Tonkin noted that the Pilbara ISOCo is seeking comment from stakeholders on its operational procedures and suggested that RBP examines these procedures and related market-based issues. He suggested developing alternative methods to reduce barriers to entry, such as allowing facilities to opt out of spinning reserve and other ESS costs if generation and load can be matched across the grid. • Mr Tonkin also suggested considering allowances for demand side management, and examining cost structures for firm and flexible demand and how it can be integrated to deliver the lowest cost solution for users. The Chair acknowledged Mr Tonkin's suggestions and emphasised the importance of maintaining the overall reliability and security of the system when considering and implementing changes to the PNR. Mr Robinson agreed and noted that, in the SWIS, there are mechanisms by which participants are excluded from contributing to a service. The Chair added that this mechanism is overseen by AEMO who determine a participant's risk factors.	
9	**Next Steps** Mr Robinson presented the next steps for the EPNR project (slide 22). The Chair closed the meeting.	

The meeting closed at 11:07am.