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

Minutes

Meeting Title:	Evolution of the Pilbara Network Rules Working Group
Date:	15 April 2024
Time:	9:30 AM – 11:30 AM
Location:	Online, via TEAMS

Attendees	Company	Comment
Dora Guzeleva	Chair, Energy Policy WA	
Anthony Ravi	APA	
Nathan Kirby	BHP	
Rebecca White	BHP	
Lekshmi Jaya Mohan	BP	
Anthony Guevarra	CITIC Pacific Mining	
Melinda Anderson	Economic Regulation Authority	
Herman Prinsloo	Horizon Power – Retail/Generation	
Jaden Williamson	Horizon Power – Pilbara Network	
Guy Tan	Horizon Power – Pilbara Network	
Summa McMahon	ISOCo	
Timothy Edwards	Metro Power Company	
Noel Michelson	Rio Tinto	
Shervin Fani	Woodside	
Sunny Vijayalayan	Woodside	
Tamara Brooker	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	

Item	Subject	Action
1	**Welcome** The Chair opened the meeting at 9:30am 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, 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. The Chair noted that the Pilbara Advisory Committee (PAC) will meet on 18 April 2024 to review certain items discussed during EPNRWG meetings. She advised that the PAC has received meeting papers for its upcoming meeting which will be updated to include a summary of outcomes from today's EPNRWG meeting.	
4	**Modelling Approach – Recap** The Chair invited Mr Robinson to present. Mr Robinson presented the modelling approach, continuing the discussion from the previous EPNRWG meeting (slides 7 and 8). The following key points were made: ▪ At a high level, the modelling aims to explore the potential benefit or efficiency gain for different levels of integration (including operational and system integration) in the Pilbara. Mr Robinson invited questions and comments from the Working Group. ▪ Mr Ravi noted the modelling assumption on slide 2 that, "unconstrained transmission investment – generation location is less important than its quantity" and wondered how this assumption may impact security and reliability, querying how this can be taken into account. ▪ Further, Mr Ravi noted that intuitively (without having done the modelling exercise) it is likely that 'full integration' will produce a more efficient outcome than the counterfactuals, and queried how it can be ensured that the model is not biased towards full integration, including how key outputs such as cost to serve will be measured and considered. Mr Robinson responded that security of supply needs to be evaluated quantitively to be inputted into the modelling on the same basis as other elements. He advised that EPWA is yet to develop a method to quantitatively value security of supply. Mr Robinson agreed with Mr Ravi's point that the overall costs is not the only key consideration, and noted (with reference to slide 7) that, while the dispatch tool will provide an overall cost to serve, it will also provide insights into the potential costs (and savings) to vertically integrated entities. ▪ Ms White asked whether the total cost to serve, which will include market costs and transmission costs, will look at costs at a particular point in time, or will be a measure of overall costs over the life cycle. Mr Robinson noted that the transmission investment costs will not be examined as a modelling variable. Instead, the model will assume different transmission	

Item	Subject	Action
	network builds as exogenous variables and explore the most efficient level of integration for each scenario. ▪ Ms White acknowledged that the modelling is a comparative exercise and suggested that, for external stakeholders, it would be beneficial to provide appropriate footnotes/other costs to provide clarity and ensure they are not overlooked. Ms Guzeleva reminded Working Group members that the modelling exercise does not intend to plan the transmission or generation system, but rather explore scenarios that can be used to assess the ability of the PNR to achieve the Pilbara objectives. Mr Robinson noted that in the scenario modelling, there are default assumptions that all the load is connected and there is enough generation to supply it. He noted that if there are particular transmission options that Working Group members identify as infeasible, they can be omitted from the base transmission network model. Mr Robinson provided a high-level overview of the two dimensions proposed for defining scenarios (slide 9) – sectoral drivers (various levels of demand and renewable penetration) and integration level (level of operational integration and coordination). ▪ Mr Williamson sought clarification of the term integration, noting it is distinct from interconnection, and queried whether the interconnecting of islanded systems in the Pilbara will be captured under the sectoral drivers. Mr Robinson agreed that integration and interconnection are separate concepts and confirmed that interconnection will be reflected in the modelling and scenarios through the sectoral drivers dimension. The model will assume that all (relevant) loads are connected. He added that the sectoral drivers dimension will also consider the electrification (or non-electrification) of industries and its projected impact on demand growth.	
5	**Sectoral Drivers** Mr Robinson presented an overview of the sectoral drivers dimension which is expected to leverage the 2023 modelling scenarios (slides 11-15). ▪ Mr Robinson asked Mr Coates if any additional information regarding the 2023 modelling has been published. Mr Coates indicated that a stakeholder facing report is expected to be published soon (date is unspecified). Mr Robinson invited questions or comments from Working Group members. ▪ Ms White queried if the demand projections (presented in a graph on slide 15) were the same. Mr Robinson acknowledged that the demand projections were difficult to distinguish in the graph resolution, and explained that there is a divergence in these two projections during the late 2020s, which reflects delays in the development of renewable generation due to delays in transmission build. ▪ Ms White asked if each scenario will have different transmission assumptions and assume that all existing large loads are connected. Mr Robinson advised that the default assumption for each scenario is that all existing loads are connected. This will form the base for the transmission assumptions and integration assessment. ▪ Mr Prinsloo queried whether the fuel price input assumption to the model will consider the costs associated with the transport of the fuel.	

Item	Subject	Action

Mr Robinson indicated that the fuel input assumption will reflect the delivered fuel price. He further noted (with reference to a diagram on slide 8) that the variable costs of fuel will be captured in the WEMSIM model, with fixed costs of fuel being captured in the Facility Financial Model.

Mr Robinson acknowledged that the outline of scenario assumptions is being discussed today at a relatively high level. He advised members that there will be an opportunity to refine and finalise assumptions at the next workstream meeting (on 23 May 2024), alongside initial modelling run outputs.

- Ms Jaya Mohan asked if the 0-20% wind until 2030 assumption could be increased to account for potential supply increases resulting from the development of the Australian Renewable Energy Hub.

Mr Robinson acknowledged Ms Jaya Mohan's question and reiterated that a key goal of today's meeting is to receive Working Group feedback on the modelling assumptions. Mr Robinson provided a high-level overview of the factors and thinking that influenced new build mixes in the 2023 modelling.

Mr McKay added further detail on the 2023 build mixes to provide context to the Working Group, explaining that:

- Low wind pick-up in the early 2020s reflected long lead times of projects, particularly transmission projects.
- In the 2030s, there was a projected need for overnight sources of renewable energy leading to a focus on added wind resources.
- In the 2040s, the cost assumption (based on the CSIRO's generation cost database) included substantial cost reductions for solar PV, which led to a projected high uptake of solar.
- The 2023 build mix also reflects the locational aspects of demand projects, such as their proximity to the coast (which might affect cost and technology availability in cyclone areas).

Ms Guzeleva prompted the Working Group to suggest a 2030 renewable penetration assumption, noting the earlier modelling suggested 40-60% may be appropriate.

- Ms Brooker indicated that 40% renewable penetration by 2030 was achievable, but noted that it is heavily dependent on any required transmission being built and in place in a timely manner.

Ms Guzeleva appreciated Ms Brooker's input and summarised that 40% renewable penetration by 2030 would be used as a preliminary assumption.

Mr Robinson summarised the discussion, noting a high-level consensus on the proposal (outlined in slide 15) including: the use of the Current Trajectories and Current Trajectories+ to inform demand projections; renewable penetration assumptions; and the generation build composition.

- Mr Williamson asked if minimum synchronous generation requirements will be considered to model the mix between existing and future renewables.

Mr Robinson responded that minimum synchronous generation requirements have not been taken into account but could be considered if the Working Group considers it is necessary. He invited input from members on this topic.

- Mr Ravi expressed agreement with the proposal, highlighting that minimum synchronous generation requirements are essential to ensuring the system operates reliably.

Mr Robinson clarified that the input assumptions will be set in a way that provides confidence that security and reliability will be achieved.

Item	Subject	Action
	▪ Ms White queried whether, by adding constraints to the modelling and solutions for the size of the essential system services market, there is a risk of pre-determining modelling outcomes. Mr Robinson acknowledged that there are various ways that the modelling could consider the concerns raised, for example by modelling the use of a minimum synchronous generation constraint, a form of essential system service or an inertia service, by enhancing the regulation requirement, etcetera. Ms Guzeleva highlighted that the starting point in the modelling (and the integration base case) is to reflect the PNR in its current form to identify where issues and gaps may arise. Ms Guzeleva noted that the second scenario dimension (level of integration) may make assumptions like relaxing the self-balancing provision and providing some central procurement option, for the purpose of identifying whether efficiencies may exist. She stressed, however, that the purpose of the second scenario dimension (level of integration), and the overall modelling exercise, is not to simultaneously evaluate what different types of market mechanisms could be put in place. The work on identifying and analysing potential options will occur in the next stage of the project (stage three).	
6	**Integration Options** Mr Robinson presented possible integration options (slide 17). ▪ Mr Williamson sought confirmation that base case modelling will capture the existing flexibilities of the PNR which are not yet being fully utilised. For example, the ability for single generators to provide power to multiple proponents through the allocation mechanism. Mr Robinson confirmed that the modelling intends to reflect the current arrangements which allow for generators to provide power to multiple proponents, but noted that it would still be relevant to consider users managing their own reliability and security in practice, with the allocation mechanism as an available tool to do it. ▪ Mr Williamson noted that, under the existing arrangements, the extent of energy sharing and coordination is greater on the covered networks. Mr Robinson presented an outline of the modelling approach to integration options (slide 18). Mr Robinson noted the proposal to model ‘two points on the spectrum’ – the existing arrangements (status quo) and ‘full integration’ (which would approximate full centralized dispatch). He asked Working Group members if the modelling should stick to these two scenarios, or whether there should be an additional scenario(s) for a hybrid situation. No comments were made. Mr Robinson suggested that Working Group members take time to consider this matter, noting that, if there is no input from members, only the two scenarios will be modelled. He noted further that this may still enable an additional scenario to be modelled in the sectoral drivers dimension. Members were invited to provide input via email (energymarkets@dmirs.wa.gov.au).	
7	**Reliability Standard** Mr Robinson presented the existing PNR definitions (slide 20) and made the following key points:	

- The PNR and HTR do not have a specific definition or criteria for system security and reliability. The rules do not define 'accepted standards' or 'amount desired'.
- Specific definitions and criteria will be essential for the modelling.

Mr Robinson presented a proposal for defining certain parameters (slide 21) and noted that:

- This was informed by work completed during the RCM review which included a jurisdictional comparison of the planning criterion in the WEM, NEM, and other countries.
- Definitions of security and reliability will need to be refined, if the Pilbara becomes fully integrated.

Mr Robinson invited views on the presented material.

Ms Guzeleva highlighted that there is policy work underway in the WEM, which seeks to develop a single, end-to-end system security and reliability standard which may bring the network and generation planning standard closer. She suggested that, in this context, it may be beneficial to examine how network planning aligns with planning for the generation and storage on the system.

Mr Robinson asked if any Working Group members who are responsible for network and generation planning, were aware of any particular metrics used or challenges faced.

- Mr Tan supported the proposal, stating that Horizon Power's network and generation planning uses similar metrics. He highlighted that the N-1 generation standard generally applies in most systems.

Mr Robinson acknowledged Mr Tan's response, further highlighting the wide use and acceptance of the N-1 generation standard.

- Mr Prinsloo asked if any information or data regarding these matters has been obtained from other states that could be leveraged upon.

Mr Robinson responded that the proposal was based on, and closely aligns with reliability standards used in other states.

Mr Robinson explained that the NEM has a reliability standard of 0.002% and an interim standard of 0.0006% of unserved energy. He stated that these standards are not firm and used as a guideline as the NEM does not have a reserve capacity mechanism or centralised generation planning. Mr Robinson noted that, in a recent review of the NEM's reliability standard, it was determined that there was still a need for the unserved energy standard, but another mechanism may be required to protect against lower probability, high impact contingency events. This mechanism is yet to be defined.

Ms Guzeleva advised that the reliability panel will publish its final decision on the NEM review soon (date TBD). Energy Policy WA will circulate the report to the Working Group when it is published.

Mr Robinson invited views on the proposal.

- Mr Tan highlighted that the N-1 standard relates to the largest contingency, not any generation size.
- Mr Kirby noted that BHP is contemplating a similar reliability standard to the proposal. He suggested to have regard for the co-location of renewable resources and the associated challenges/impacts (i.e. cloud cover events which could affect regulation services/cause outages).

Mr Robinson acknowledged Mr Kirby's point, noting that it relates to renewable output assumptions. He noted that in using an average renewable output trace, volatility is smoothed out and recognised the reliability challenges of a renewable energy network. With this in mind, Mr Robinson clarified that the bulk of the modelling will examine average profiles, but will need to also explicitly explore issues associated with the co-location of renewables to properly assess and avoid unserved energy.

- Mr Kirby clarified that he was thinking more short-term and questioned whether there is an opportunity through the modelling to value the use of a regulation service in an interconnected system and determine the nature of what reliability services should be procured.
- Mr Kirby revisited the previous discussion surrounding constraints and the role of a specific market service in maintaining steady state frequency. He explained that, if there is a significant drop in supply, the market service (which is most likely to be the spinning reserve) will need to be able to adapt accordingly. Mr Kirby emphasised the importance of assessing the value of delivering this service through either a decentralised or centralised approach.

Mr Robinson explained that the modelling will first test the current PNR's ability to respond to various contingency events (i.e. increasing volatility). He advised that this can be modelled on the basis of the largest contingency such as large trips or correlated renewable load to assist in determining the required services.

Ms Guzeleva suggested that, during stage 3 of the project, there also needs to be consideration of what reliability services will be required to mitigate the projected increase in storage penetration. She highlighted that there is currently no equivalent of contingency lower services in the NWIS. Ms Guzeleva stated that, in stage 3, the proposed reliability standard will be assessed against the current PNR (based on the modelling outcomes in stage 2) to identify any gaps or issues.

- Ms McMahon advised that the Pilbara ISOCo has recently published a draft determination, proposing to move towards a more dynamic model for the procurement of spinning reserve essential system services. She encouraged Working Group members to review the paper and highlighted that this procurement is predominantly concerned with how much reserve is needed in the current system to account for contingencies.

Ms Guzeleva noted that the system has operated with relatively static reserve. She highlighted that a key aspect of the project is determining what services are needed to meet different goals/requirements and, subsequently, identifying the most efficient way of providing such services.

- Ms Vijayalayan asked whether demand side management would be considered as a reliability service option.

Ms Guzeleva advised that demand side management would be considered.

Ms Guzeleva added that it is also important to determine the requirements of facilities that connect to the system. She noted that this will be made clearer with modelling outcomes and can be discussed in later stages of the project.

Mr Robinson summarised the Working Group's discussion with the following points:

- there was general acceptance by the Working Group for the proposed reliability standard/metric, which is broadly similar to those already employed throughout the state.
- the ISO's proposed dynamic spinning reserve model will be reflected.

Item	Subject	Action
	▪ consideration should be given to renewable volatility in future years and modelling its effect on the requirements for essential system services. **ACTION: Energy Policy WA to circulate the NEM Reliability Review report to the Working Group when it is published.**	**EPWA**
8	**Next Steps** Mr Robinson advised that the next PNR workstream meeting on 23 May 2024 will present a more fulsome set of detailed assumptions for each scenario. There will also be an opportunity to refine modelling inputs and assumptions at this meeting (if needed), before items are finalised during the 10 June 2024 meeting. Mr Guzeleva presented the next steps for the EPNR Project (slide 23) and made the following key points: ▪ meeting materials for 18 April 2024 PAC meeting will be updated to reflect discussion in today's Working Group meeting. ▪ papers for the Working Group's (HTR workstream) 9 May 2024 meeting will be distributed to members no later than COB 2 May 2024. o with the help of the Pilbara Independent System Operator, the HTR Issues list has been compiled. The long list will be presented to the PAC for review and subsequently discussed at the HTR workstream meeting. ▪ papers for the Working Group's (PNR workstream) 23 May meeting will be distributed to members no later than COB 16 May 2024. o outputs from the preliminary modelling work will be discussed during the next PNR workstream meeting. There will be an opportunity to adjust modelling assumptions if necessary. The Chair closed the meeting.	

The meeting closed at 11:34am.