Trasmission System Plan (Draft) 2022 - Response to Submissions

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Purpose

The Transmission System Plan (TSP) is a new document, which is produced in conjunction with the Network Opportunity Map, outlining the challenges and opportunities facing power system security and reliability on the SWIS transmission system in the coming decade. It also provides a summary of Western Power's proposed network development plans to address these challenges, while maximising the long-term interest of customers.

The TSP will be produced annually by Western Power as part of the annual planning cycle, and as per the Wholesale Electricity Market (WEM) Rules Chapter 4.5B – Transmission System Plan.

In accordance with the WEM Rules, the TSP is required to be published in draft for public feedback submissions with the opportunity to provide feedback open for a minimum of 20 Business Days. A final version of the TSP, which takes into account the feedback contained in the submissions received on the draft, together with Western Power's response to the received submissions (Response to Submissions), must be published in conjunction with the Network Opportunity Map by 1 October, annually.

For the inaugural TSP (2022) the date of the draft was required to coincide with the publication of the NOM 2022. The publication of the inaugural final TSP 2022, and Response to Submissions, is required by 1 February 2023.

The Transmission System Plan (Draft) 2022, and an invitation for public feedback submissions was published on 1 October 2022 and was open for public submission until 11 November 2022.

This document captures the updates that have been made to the draft TSP, and provides a summary of the submissions received, and Western Power's Response.

1. Submissions and Western Power's Response

Western Power received formal submissions on the draft TSP 2022 from three stakeholders. These submissions have been taken into consideration by Western Power and responded to in the table below:

Summary of Submission	Western Power's Response
Network investment to support renewables Three stakeholders were particularly interested in understanding whether specific investments were being considered to alleviate curtailment and continue to support connection of renewable energy, in a timeframe that aligns with the fast-paced transition to renewables. Especially in areas where renewable resources are best located. A specific investment option identified by one stakeholder was the completion of a cross-connection of the 330 kV line between Three Springs and Northern Terminal, making it a duplicate line. One stakeholder specifically referenced that these investments should aim to maximise net benefits and reduce long-term cost to the consumer. One stakeholder specifically discussed the impact of AEMO's dispatch engine potentially not eliminating curtailment in the North region, but stating that where it was eliminated, this would likely be in exchange for a higher Essential System Services supply, specifically contingency reserve and Rate of Change of Frequency. References were made to: • The WA State Government's 80% emissions reduction target • Synergy's requirement for 800MW wind and 1200MW storage within the 8-years to cover its coal retirements and impact to currently available network capacity • Plans to substitute thermal generation from large industrial loads (Boddington Gold Mine, South 32 and Alcoa). • The speed of change and utilisation of existing excess capacity forecast by AEMO in the 2022 WEM Electricity Statement of Opportunity (ESOO).	Western Power is developing a number of options to unlock additional capacity in the northern SWIS corridor and facilitate new renewable generation connections and new loads. One of the options being considered is the conversion of the second circuit to 330kV between Three Springs and Northern Terminal. Western Power is working closely with AEMO to assess the impacts of the planned coal-fired generation retirements. These assessments are focused on identifying the risks and associated network augmentation required to maintain SWIS system security and stability once the coal-fired generation is retired. A first phase of assessments is complete, with further work planned to refine the assessments and optimise network augmentation options against security, generation, and investment and market cost. The output of these assessments and optimisations will inform future network augmentation requirements to respond to the planned coal-fired generation retirement, with further detail expected to be included in the next publication of the TSP. Western Power's commitment to decarbonisation is reflected in Western Power's 10-year Corporate Strategy[1] and underpins Western Power's network investment and expenditure planning. Network augmentation to further facilitate decarbonisation and achievement of the WA State Government's net zero targets beyond the planned coal-fired generation retirements will be included in future TSPs, as State and industry plans progress. The evaluation of network congestion costs, as they become available, against the cost of network augmentation will identify net benefit opportunities, where sufficient net benefit is identified the network investment will be a feasible option to alleviate network constraints. From the commencement of the new WEM arrangements on 1 October 2023 (WEM Commencement), integration of the operation of the Real-Time Market and the Central Dispatch Process will be made in accordance with the Security Constrained Economic Dispatch (SCED) market model. The WEM Dispatch Engine (WEMDE) will not be able to eliminate network constraints but will optimise dispatch outcomes with respect to network constraints to maximise the value of trade in accordance with the principals of SCED.

[1] Western Power's 10-year Corporate Strategy

Summary of Submission	Western Power's Response
Planning assumptions One stakeholder was particularly interested in understanding some of the inputs to development of the TSP and investment identification, including the estimation of the cost of binding network constraints. A request was made for the estimation of the cost of binding network constraints be provided for certain regions ahead of WEM Commencement based on draft thermal constraints already published by the Australian Energy Market Operator, to support potential long lead times to construct both network and energy projects.	The method used by Western Power to estimate the Market Impacts of Network Congestion in the TSP is described in Section 17 of the TSP and uses a 'simplified' assessment of what future network congestion costs may look like under the future constrained market using historic Generator Interim Access (GIA) operational data to estimate the cost of curtailment. Western Power plans to present network congestion assessments in future TSP's, as network congestion information becomes available post WEM Commencement. Western Power does not believe that further estimation based on draft constraints is beneficial ahead of actual congestion information availability post WEM Commencement, in October 2023, as any estimates provided on draft information would be indicative only, and likely insufficient to provide justification for investment.
Short-term Resolutions to Capacity Constraints One stakeholder submission raised the opportunity to consider options to alleviate capacity constraints in the short-term, such as the introduction of Dynamic Line Ratings, referencing opportunities in East Country and the Goldfields.	To unlock further capacity in East Country and the Goldfield's region and facilitate new renewable generation connections and loads, Western Power is developing a number of short and long-term options. Options under consideration include: the inclusion of Dynamic Line Ratings, and a series of network upgrades to alleviate the existing network constraints and increase the power transfer of the 220kV supply.

Summary of Submission	Western Power's Response
Alignment of the TSP with Strategies and Plans, Expenditure Forecasts, and other industry publications Three stakeholders seek to ensure that the TSP has been, and in the future will continue to be, developed in alignment with the different strategies, plans and other industry publications that exist or are being developed for the state and the SWIS such as; the WA Government's decarbonisation commitment, including Synergy's coal-fired power station retirement, the Sectoral Emissions Reduction Strategies (SERS), the SWIS Demand Assessment, the next Whole of System Plan (WOSP), and the WEM ESOO, as well as seeking to confirm that Western Power's Fifth Access Arrangement (AA5) Draft Decision Response incorporates sufficient expenditure forecasts to support. One stakeholder sought to understand whether initiatives or significant expenditure included in Western Power's AA5 could be identified that may result in a WOSP 'Priority Project' recommendation.	Western Power is playing a significant role in the development of the WA State Government's SWIS Demand Assessment which is fast-tracked assessment of renewable energy demands in the SWIS, and which will inform a consolidated view of the future network ahead of the next WOSP. As reflected in the WA State Government's Assessment of electricity demand to inform WA's future network media statement (24 Aug 2022)[2], the information collected by the SWIS Demand Assessment will be used to inform the electricity Sectoral Emissions Reduction Strategies. Western Power's involvement in the development of the SWIS Demand Assessment will help to ensure alignment across the development of future versions of the WOSP and TSP with relevant outputs from the SWIS Demand Assessment expected be included in the next publication of the TSP. The WOSP and the TSP play a key role in planning for the transmission system over the short, medium and long-term time horizon. While the two plans share key inputs and assumptions, they also have important differences. Details of these interactions and differences are explained in detail in Section 3.3 of the TSP. The WOSP considers a range of different energy scenarios and future WOSPs are expected to including decarbonisation), which may identify future 'Priority Projects', which will help to reduce funding risks, reduce regulatory approval requirements, and accelerate the delivery of the works. Western Power's annual planning cycle, which includes the development of the annual TSP, is set up to consider the outputs from the WOSP(s), when developing and refining Western Power's 10-year network investment plan, which includes expenditure forecasts within the relevant Access Arrangement period(s) and will also take into consideration network investments identified as 'Priority Projects' in future WOSPs. As per WEM Rules Section 4.5A.14, a WOSP will identify any 'Priority Project' that Western Power is able to progress in accordance with the relevant provisions of the Electricity Network Access Code. AEMO and Western Power will collaborate with the Coordinator of Energy on the development of the WOSP, however the Coordinator of Energy is responsible for the overarching development and publication of the WOSP, including the determination of which network investments are identified as 'Priority Projects'. The WOSP 2020[3] did not identify any 'Priority Projects'. Section 6 of the TSP provides insight into Western Power's Demand Forecasting Methodology, and the relationship of this methodology with AEMO's WEM ESOO 2022.

[2] WA Government Media Statement (24 Aug 2022): Assessment of electricity demand to inform WA's future network

[3] Whole of System Plan 2020

Summary of Submission	Western Power's Response
Western Power's Customer Connection Process One stakeholder was keen to ensure that Western Power's customer connection process was supportive, and not time-prohibitive, of the pace at which the state is transitioning to renewable generation.	Western Power agrees that a timely process is required to adequately meet the needs of proponents. Western Power also acknowledges that the process must provide certainty and fairness for applicants and support the security of the energy system. The current and rapid transformation of the energy grid places an enormous responsibility on the network service provider to ensure that any new connections do not jeopardise the ongoing safety, reliability, security and resilience of the network. Western Power is committed to working with stakeholders to review the current process. Section 3.1 of the Access Arrangement Response published on 19 January 2023[4] describes the accelerated efforts currently underway to streamline the connection process for major customers greater than 1MVA.

[4] Access Arrangement 2022-2027 - Economic Regulation Authority Western Australia (erawa.com.au)

2. Updates to the Draft Transmission System Plan 2022

Although the received submissions have been responded to in section 1, they did not result in changes to the TSP. Separate to the submissions received, the following issues were identified with the draft by Western Power and updates have been incorporated in the final TSP 2022.

- Addition of Eneabba and Yandin Terminal to the simplified bulk diagram (Pg.7, Fig.2)
- Format and reference corrections (Pg.36 and 121)
- Inclusion of 132kV fault levels for Kojonup (Pg.132)
- Update of Marriot Road project corrected to reflect uprating of the KEM-MRR 81 & 82 circuits (Pg.62).
- Update of Byford Substation Additional Transformer and Load Transfers to reflect Installation of a fourth 132/22KV 33 MVA transformer rather than installation of a second (Pg. 106 & 107)
- Updated the latest system minimum demand value (Pg 25, Fig.11)
- A series of changes to across multiple region chapters for substation additions and substation reclassification (section 10.1, 11.1, 12.1, 13.1, 14.1, 15.1)
- Updated the in-service date and associated figures for the third West Kalgoorlie transformer and SVC replacement (Fig.37, 38, 41)
- Updated the in-service data for the Forrest Ave 66 kV substation decommissioning (Fig 59, 60, Table 34-35)
- Updated description of Table 42 and Table 43 (Pg. 125)
- Addition and removal of substation fault levels (Table 45 & Table 47)
- Addition of Average Outage Duration (AOD) statistics (Table 47)