Department of Energy and Economic Diversification

GOVERNMENT OF WESTERN AUSTRALIA

Energy Policy WA

Coordinator of Energy Determination: Western Power Non-co-optimised Essential System Services Trigger Submission

Network Support Services for the Byford Substation

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Energy Policy WA
Level 1, 66 St Georges Terrace
Perth WA 6000

Locked Bag 100, East Perth WA 6892
Telephone: 08 6551 4600

www.energy.wa.gov.au
ABN 84 730 831 715

Enquiries about this report should be directed to:

Email: energymarkets@deed.wa.gov.au

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1. This Determination

The Coordinator of Energy (Coordinator) has determined, under clause 3.11A.4 of the Electricity System and Market (ESM) Rules, to trigger a Non-Co-optimised Essential System Services (NCESS) procurement process by Western Power for Network Support Services (NSS) to resolve a peak capacity issue at the Byford substation. The services are for 30MW of peak capacity / decrease in withdrawal from 1 December 2026 increasing to 45MW in 2029.

An NSS, procured through the NCESS process, is a contracted service provided to the network operator by a generator, retailer, Distributed Energy Resource (DER) aggregator or customers to help manage or solve local network constraints.

The timing of the proposed services commencement will be refined through this NCESS procurement process, including through input from potential service providers in the Expressions of Interest stage of the process.

In accordance with clause 3.11A.8 of the ESM Rules, the Coordinator is publishing this determination to outline the reasons for triggering the NCESS procurement process on this occasion.

2. Background to the Determination

2.1 The NCESS Framework

The primary objective of the NCESS framework is to enable AEMO, a Network Operator or the Coordinator to identify and justify the need for services, not already available through existing market mechanisms, and procure those services in a transparent and efficient manner.

More specifically, the NCESS framework is intended to:

- enable the procurement of new services to respond to unforeseen events or changes in the power system that may threaten system security;
- create appropriate incentives for non-network services to be procured to meet power system security and reliability requirements in a more economically efficient manner when compared to network augmentation;
- enable maintenance of power system security and reliability at the lowest efficient cost to consumers; and
- ensure the rapidly evolving power system continues to meet emerging technical requirements and power system security and reliability standards.

Under the NCESS framework, AEMO and the Network Operator may identify the need for NCESS through system planning processes, and if certain conditions are met, must submit a request to the Coordinator to trigger the NCESS procurement process under the ESM Rules.

The ESM Rules outline the process by which each of the entities must seek to trigger the NCESS procurement process and the factors the Coordinator must consider in assessing a submission by AEMO or a Network Operator.

3. Western Power Submission

3.1 Submission Process

The Coordinator received a submission from Western Power on 23 July 2025, requesting that the Coordinator triggers the NCESS procurement process for NSS to resolve a peak capacity issue at the Byford substation.

Under clause 3.11A.2 of the ESM Rules, AEMO or a Network Operator must make a submission to the Coordinator to determine whether to trigger an NCESS procurement process if they reasonably consider that one or more of the following events has occurred or applies:

- if the forecasted or actual magnitude and frequency of Energy Uplift Payments in the WEM increases to an uneconomic level (assuming locational and situational market power is being controlled under the relevant processes), indicating a locational constraint in the network;
- if frequent AEMO Intervention Events to relieve non-frequency control constraints such as loss of reactive power or system strength indicate a network security problem;
- if network planning assumptions change at any time during the network planning timeframe (for example, demand is lower or higher than forecast), signalling the need for an emerging service such as reactive power support or voltage stability which could be provided by non-network services located in the relevant part of the network;
- if a modification to an existing Power System Security or Power System Reliability standard or the introduction of a new Power System Security or Power System Reliability standard within a network planning cycle trigger the needs for an NCESS; or
- if AEMO considers, in the course of its normal power system operations, that a significant threat to Power System Security or Power System Reliability exists or is emerging, and the existing mechanisms under these ESM Rules may not be sufficient to address the threat.

An NCESS submission must contain sufficient information and analysis regarding the potential or actual impact on Power System Security, Power System Reliability or costs for each trigger event to enable the Coordinator to make a determination (clause 3.11A3.3(c)).

The next section provides a summary of the issues raised in Western Power NCESS submission. A more detailed version of Western Power submission is available here on the Coordinator's website.

3.2 Western Power Submission in brief

Western Power has identified the location on the distribution network where a peak capacity issue may be addressed through orchestrated DER, demand side management or Electric Storage Resource (ESR) solutions in the short to medium term until planned capacity improvement works can be completed.

Western Power is seeking to procure services for the provision of peak capacity / decrease in withdrawal to be provided at times when the Byford substation is forecast to exceed its planning capacity limits.

The trigger submission summarises Western Power's assessment of why a non-network solution may be the most suitable and cost-effective option to address the peak capacity issue at the Byford substation until planned capacity improvement works can be completed.

Western Power consulted with Energy Policy WA and AEMO, as required by section 3.2 of the NCESS Guideline (published in accordance with clause 3.11A.2A of the ESM Rules) and clause 3.11A.2(f) of the ESM Rules. Outcomes from this engagement were addressed in Western Power's submission.

3.2.1 Services sought

Western Power seeks to procure NSS to address a peak capacity issue during times when the Byford substation is forecast to exceed its planning capacity limits. The services sought include:

- a non-network solution that aggregates behind the meter DER to provide peak capacity / decrease withdrawal;
- demand side management, more generally, to decrease withdrawal; and
- a non-network solution from ESR providing peak capacity.

Many distribution feeders are now exceeding the planning limits,[1] elevating the risk of customer outage due to capacity constraints above an acceptable level. This overloading is a direct result of the rapid increase in peak demand across the South West Interconnected System (SWIS), which is forecast to continue.

The Byford substation has three power transformers with a total planning capacity of 77MW. The medium term demand forecast shows the demand at the Byford substation significantly exceeding its planning rating ahead of planned capacity improvement works.

- Western Power has accelerated its short-term capital investment on the distribution network to manage feeder overutilisation and maintain supply reliability.
- There are two previously approved investments that will transfer some load away from the Byford substation by mid to late 2027 and a third investment is in the scoping phase with a forecast completion of early 2030.

This creates a high network risk at the Byford substation as it is forecast that load will increase above its available installed capacity.

The Byford substation has been operating above its planning capacity of 77MW and is forecast to see an increase in demand as shown in Table 1 below.

As of 18 June 2025, the Byford substation has a total of 33.4MW of additional load forecast from customer funded distribution projects, most of which relate to land development. This has been added to the PoE10 forecast curve in stages, which results in a sharp increase in the forecast from 2026 onward.

Based on this forecast, the additional active power requirement, or a reduction in demand, sought through this NCESS procurement process is 30MW from December 2026 increasing to 45MW in 2029.

Table 1: Byford PoE10 substation demand forecast table

Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
PoE10 Forecast +Load in Pipeline (MW)	96.59	107.93	113.97	107.81	123.75	126.09	128.43	130.77	133.11	135.45
Planning Capacity (MW)	76.96	76.96	76.96	76.96	76.96	76.96	76.96	76.96	76.96	76.96
Active Power Required (MW)	19.63	30.97	37.01	30.85	46.79	49.13	51.47	53.81	56.15	58.49
Active Energy Required (MWh)	47.45	94.11	122.39	93.58	172.40	185.12	197.84	210.56	223.28	236.97

The service quantity will align to the forecast capacity peaks within the Hot Seasons of the contract term, as listed in Table 1 above. The service is required from 1 December 2026 to 31 March 2029 and to be available during the Hot Season each year (1 December to 1 April).

Western Power will seek to gain industry feedback through the Expressions of Interest step of the NCESS process on any benefits associated with a different contract duration or a change to the commencement date.

[1] Western Power states that the planning limit is set at 80% to reserve sufficient capacity to manage planned and unplanned contingency events. In the event of a feeder fault, it is assumed that up to four other feeders are able to back feed the load from the faulty feeder.

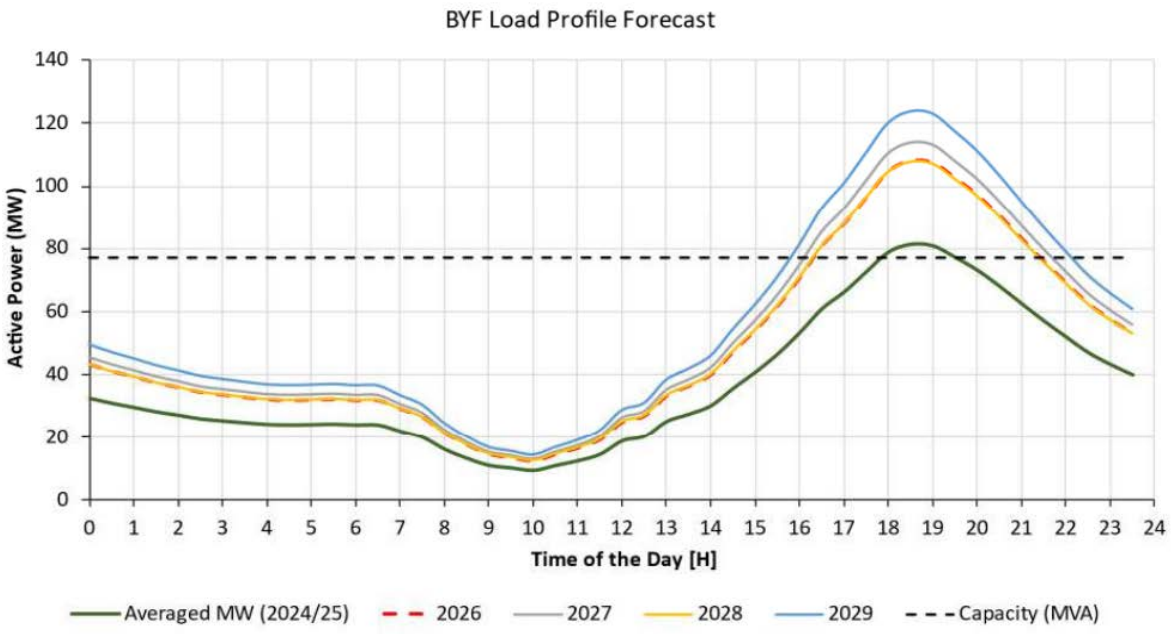
Multiple providers will be considered for both the quantity and duration of the service, and there is no requirement for facilities to be registered with AEMO to provide this service.

The service will need to be available on any day during the activation period and will be called on as a priority to any other services contracted.

The service will be activated between the hours of 4:30PM to 8:30PM AWST.

The contracted service will be called upon no more than 30 times each year for a duration up to a maximum of 4 hours in accordance with the profile in Figure 1 below.

Figure 1: Byford substation averaged load profile from the top 10 hottest days in 2024/25, and scaled for future years



4. Coordinator's Assessment

In accordance with clause 3.11A.7 of the ESM Rules, the Coordinator is required to take a number of factors into account when assessing Western Power's submission and determining whether to trigger the NCESS procurement process.

This section provides a summary of the Coordinator's assessment of these factors, which has relied heavily on the analysis provided in Western Power submission.

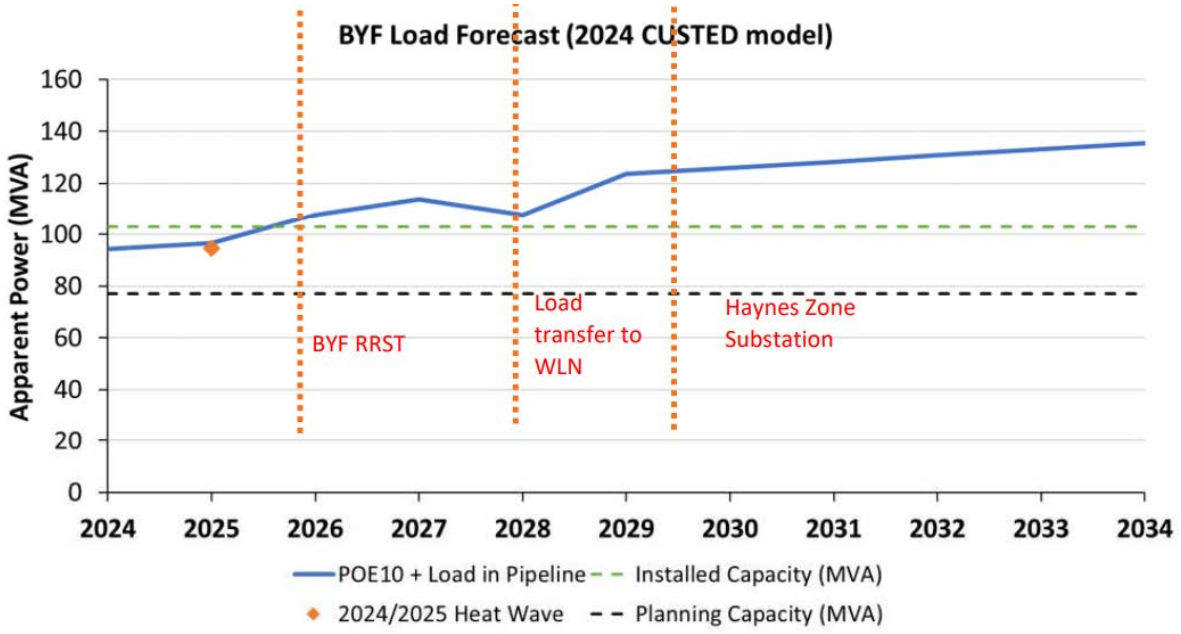
4.1 Where the issues relate to Power System Security or Power System Reliability, the extent to which an NCESS will address these issues (clause 3.11A.7(a))

The Coordinator has determined that a non-network solution, in the location identified by Western Power, may be the most suitable and cost-effective option to address the peak capacity issue at the Byford substation in the short to medium term until planned capacity improvement works can be completed.

Western Power has submitted that, as a direct result of the rapid increase in peak demand across the SWIS, many distribution feeders are now exceeding the planning limits.

This creates a high network risk at the Byford substation in the short to medium term as it is forecast that load will increase above its available installed capacity as shown in Figure 2 below.

Figure 2: Byford substation peak demand forecast



The Coordinator agrees that, without procuring the services via the NCESS procurement process, there is an elevated risk of customer outages due to capacity constraints being above an acceptable level.

4.1.1 The issue the NCESS is aiming to address

Western Power is required to seek the most prudent and efficient solution to resolve any network risks or constraints. As a result, Western Power assesses a range of non-network and network options, including whether these options can meet the scale and timing of the identified needs.

The Byford substation has three power transformers with a total planning capacity of 77MW. The medium term demand forecast shows the demand at the Byford substation significantly exceeding its planning rating ahead of planned capacity improvement works. This creates a high network risk at the Byford substation as it is forecast that load will increase above its available installed capacity.

4.1.2 Extent to which NCESS will address this issue

The Coordinator agrees that this NCESS procurement process has the potential to enable services to be provided that deliver network benefits for the market and electricity consumers.

4.2 The extent to which an NCESS will minimise costs in the WEM (clause 3.11A.7(b))

The Coordinator considers a non-network solution for the Byford substation may be the most suitable and cost-effective option to address the peak capacity issue in the short to medium term, specifically:

- a non-network solution that aggregates behind the meter DER to provide peak capacity / decrease withdrawal
- demand side management, more generally, to decrease withdrawal; and
- a non-network solution from ESR providing peak capacity.

The ultimate network solution is establishing a new zone substation by October 2029. This means that the Byford substation remains at risk for the next 3-4 years. To address this temporary capacity

shortfall and maintain network reliability, the short-term support by a service procured through the NCESS process is required until the ultimate network solution is delivered.

The Coordinator considers that Western Power must apply appropriate mitigation measures to minimise the cost of this procurement. In particular, consideration must be given to the requirements in the Service Specification to ensure that a range of providers and technologies can compete for the services.

Contracts should be structured in a manner that ensures availability and delivery of the service without exceeding the value of the service to consumers.

At the request of Western Power, the Coordinator has redacted commercially sensitive information from the analysis in accordance with 3.11A.8.

4.3 The relative merits between procuring an NCESS or augmenting the network (clause 3.11A.7(c))

Based on Western Power's assessment, the Coordinator considers that a non-network solution for the Byford substation may be the most suitable and cost-effective option to address the peak capacity issue in the short to medium term.

Western Power states that the ultimate network solution is establishing a new zone substation by October 2029 and estimates that the net present cost for a three-transformer 132 kV / 22 kV zone substation is approximately $61 Million.

The Coordinator agrees that market-based services are the most suitable option to address the peak capacity issue at the Byford substation and to ensure reliable supply, as required by the minimum reliability standards, in the short to medium term until planned capacity improvement works can be completed.

4.4 Whether it is suspected that there is a potential exercise of market power (clause 3.11A.7(d))

The Coordinator is not aware of any market power aspects relating to the identified trigger.

4.5 Whether the procurement of an NCESS is consistent with the State Electricity Objective (clause 3.11A.7(e))

The State Electricity Objective was recently updated to keep pace with the rapidly transitioning power system and to adapt it to the integration of new technologies while having regard to the environment, including electricity sector emissions.

The State Electricity Objective, under section 122 of the Electricity Industry Act 2004 is to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers of electricity in relation to:

a) the quality, safety, security and reliability of supply of electricity;

b) the price of electricity; and

c) the environment, including reducing greenhouse gas emissions.

The Coordinator considers that the proposed NCESS procurement, as a mitigation of the risks identified in the Western Power submission, is consistent with the State Electricity Objective in relation to:

The quality, safety, security and reliability of supply of electricity

The Coordinator considers that the issues the proposed NCESS procurement process is aimed at addressing relate to Power System Security and Power System Reliability, and services procured via the NCESS process have the potential to adequately address the issues.

The price of electricity

The Coordinator considers that the two-stage NCESS procurement process in the ESM Rules has been developed to encourage maximum competition and ensure the cost of the procured services is as efficient as possible. This can have a significant influence on costs, thus minimising the long-term cost of electricity supply to customers in the SWIS.

The Coordinator considers that the proposed procurement of NCESS has the potential to minimise the long-term cost of electricity services to customers in the SWIS, as follows:

- In accordance with clause 3.11B.10, Western Power must select one or more NCESS offers which meet the NCESS Service Specification and will result in the highest value for money for providing the NCESS;
- In accordance with clause 3.11B.11, Western Power must, when assessing whether an NCESS offer will deliver value for money, conduct cost-benefit analysis or other assessments to demonstrate how it will maximise value for money; and
- In accordance with clause 3.11B.12, Western Power may decide to not select any NCESS offers if it considers that none of the NCESS Submissions represent value for money.

The environment, including reducing greenhouse gas emissions

In accordance with clause 3.11B.1, Western Power must prepare a draft NCESS service specification.

The Coordinator considers that, to meet the State Electricity Objective, a service specification can (and should) be developed by Western Power such that the service can be delivered by a range of technologies, including sustainable energy options and technologies such as those that make use of renewable resources or that reduce overall greenhouse gas emissions.

In accordance with clause 3.11B.3A, Western Power must develop and publish, an Expressions of Interest form, setting out the details prospective service providers must provide, which must include whether the facility or equipment, that may be able to provide the service, can “fully or partially” meet the draft NCESS Service Specification. This would allow a range of technologies to compete for the services.

4.6 Whether procurement of an NCESS will be in the long-term interests of consumers (clause 3.11A.7(f))

The Coordinator considers that a not-network solution may be the most suitable and cost-effective option as an interim measure in the short to medium term until planned capacity improvement works can be completed.

As noted in section 4.2, Western Power must continue to consider mitigation measures to minimise the cost of the proposed NCESS procurement. It must also ensure that the NCESS procurement process and the Service Specification include measures to deliver the lowest cost to consumers, as discussed in section 4.5.

5. Determination Summary

On the basis of the assessment in this determination, the Coordinator considers that an NCESS procurement of NSS services by Western Power is the most suitable and cost-effective option to address the peak capacity risk at the Byford substation and to ensure reliable supply, as required by the minimum reliability standards, in the short to medium term.

Western Power's medium-term forecast shows the demand at the Byford substation exceeding its planning rating by 30MW in 2026 and increasing to 45MW by 2029, ahead of planned capacity improvement works.

This means that the Byford substation remains at risk for the next 3-4 years. To address this temporary capacity shortfall and maintain network reliability, a short-term support by a service procured through the NCESS process is required until the ultimate network solution is delivered.

The Coordinator is satisfied that the trigger conditions in section 3.11A of the ESM Rules have been met and that an NCESS procurement process should be conducted by Western Power in accordance with section 3.11B of the ESM Rules.

The Coordinator expects that Western Power will take into account the matters regarding the NCESS procurement process addressed in section 4 of this determination.

6. Next Steps - NCESS Procurement Process

Based on the information in Western Power submission, the Coordinator has determined that Western Power is the procuring party for this NCESS and will be responsible for paying for the services once the commercial terms are determined.

On this basis, Western Power must prepare a draft NCESS Service Specification for the services in accordance with clause 3.11B.5 of the ESM Rules. Western Power must consult with the Coordinator and AEMO in the preparation of this draft specification.

Within 20 Business Days of the publication of this determination, unless otherwise agreed with the Coordinator, Western Power must advertise a call for Expressions of Interest on its website and on at least one major tender portal.

Respondents must be given at least 20 Business Days to respond to the Expressions of Interest call, from the time it is published.

This first step of the process will enable Western Power to determine what suitable service providers exist and what solutions they can provide to meet fully or partially the requirements. Suitability may depend on several factors such as the type of technology, operational limitations, etc. If suitable providers are not found, the service specification may need to be modified.

If the NCESS procurement is to proceed based on the Expressions of Interest received, Western Power will issue a call for NCESS submissions and publish a final service specification.

Any existing or new facility or equipment whether belonging to registered or intending market participants is able to participate in an NCESS procurement. New providers that did not participate in the Expressions of Interest step can also apply.

Energy Policy WA
Level 1, 66 St Georges Terrace, Perth WA 6000
Locked Bag 100, East Perth WA 6892
Telephone: 08 6551 4600
www.energy.wa.gov.au