



Returnable Schedule for Expression of Interest
Non-network solutions to meet system strength requirements in SA

November 2023

Version 1.0

Security Classification: Commercial in Confidence

Context

ElectraNet is seeking Expressions of Interest (EOI) from potential **System Strength Contractors**¹ to provide non-network options to:

- address an additional system strength requirement in the transmission network at Robertstown and Para that is forecast to arise from 2 December 2025; and/or
- deliver system strength services to the SA power system to meet standards set by AEMO from 2 December 2025, including for the safe and secure operation of the power system and to facilitate the stable voltage waveform of new inverter-based renewable generators (efficient level).

Responses to this EOI will inform the development of ElectraNet's Regulatory Investment Test for Transmission (RIT-T) for '[Meeting System Strength Requirements in SA](#)', including the technical and economic assessment of credible options to meet ElectraNet's system strength requirements across SA and over different time horizons. The RIT-T is a whole-of-market economic benefits test and optimisation; its conclusions will rank potential network and non-network solutions and identify the preferred option (or portfolio of options) that will maximise net market benefits.

Where non-network solutions (i.e. services procured from third parties) form part of the preferred option selected through the RIT-T process, ElectraNet will run a competitive procurement process and/or commercial negotiations to establish network support contracts with these proponents.

This Returnable Schedule should be read in conjunction with our EOI for [Non-network solutions to meet system strength requirements in SA](#).

Mandatory information to be provided

Proponents should provide the following information (as applicable), using this Returnable Schedule.

Project details

Parameter	Applicable technology	Description	Response
Company name	All	Name of the company submitting this EOI	

¹ System Strength Contractors are defined as third party businesses that provide system strength services to ElectraNet under a network support contract.

Parameter	Applicable technology	Description	Response
ABN	All	ABN of the company submitting this EOI	
Key contact name	All	Name of the key contact for this EOI	
Contact email address	All	Email address for the key contact	
Contact phone number	All	Phone number for the key contact	
Solution name / address	All	Name and/or address of the solution (or multiple units that form part of the solution)	
Location	All	Substation of connection to the transmission network	
Commissioning date	New or modified solutions	Expected date for a proposed new project to have completed construction, grid connection, testing and all commissioning activities and be available to provide the proposed system strength service	

Technical

Parameter	Applicable technology	Description	Response
Technology type	All	e.g. synchronous generator, grid forming battery, grid forming renewables, synchronous condenser	
Asset life	All	Expected operating life for (new and existing) assets that will provide proposed system strength services	
Details	All	Details of equipment, including multiple units if appropriate, and any other relevant information describing the solution (existing or new)	

Parameter	Applicable technology	Description	Response
Rated Capacity	All	Rated capacity of the solution in MVA	
Minimum stable operating level	Synchronous generators	If the solution is a synchronous generating unit(s), the minimum stable operating level of each unit in MW	
Overload capacity	Inverter-based solutions	If the solution is an inverter-based solution, the overload capacity of the inverter in MVA or percent of Rated Capacity	
Duration of fault current contribution	All	In the event of a fault in the system, duration that the solution can sustain the fault current contribution in seconds	
Fault current contribution at the point of connection	Existing units	If the solution is an existing unit(s), fault current contribution at the point of connection to the network in MVA	
Sub transient impedance of the machine	New synchronous machine	If the solution is a new synchronous machine, sub transient impedance of the machine, in per unit (p.u.)	
Impedance of the transformer	New inverter-based solutions	If the solution is a new inverter-based solution, impedance of the transformer, in per unit (p.u.)	
Vector group of the transformer	All	For example, Star/Delta, Delta/Star, Star/Delta/Delta etc.	
Line impedance to the point of connection	New solutions	If the solution is new, an estimate of line impedance to the point of connection of the transmission network, in per unit (p.u.)	
Communications	All	Proposed dispatch communications protocol with AEMO and/or ElectraNet's control room	
Inertia contribution ²	All	Inertia or synthetic inertia contribution of the solution in MWs	

² Note that this EOI is not seeking inertia support. However, ElectraNet is likely to have future inertia needs as synchronous generators retire and will seek to co-optimize these needs where possible.

Availability and activation

Parameter	Applicable technology	Description	Response
Models	Inverter based resources	Simulation models must be supplied, that need to comply with the requirements stipulated in AEMO's Power System Model Guidelines and Detailed Model Acceptance Test (DMAT) Guidelines. This includes the provision of Electromagnetic Transient (EMT) models for power electronic interfaced equipment, including grid forming technologies in PSCAD/EMTDC™.	
Start-up time	All	Expected time following a request for enablement before the solution can provide contracted system strength services	
Continuous running time	All	Maximum period of time the solution can be run continuously when providing system strength services	
Annual availability	All	Annual availability of the solution to provide system strength services, represented as a percentage of a year. 95% is proposed, but proponents may choose to propose an alternative value	
Annual maintenance duration	All	Duration of a year in which the solution would be offline for maintenance (represented in hours or a percentage)	
Periods of unavailability	All	Likely month/day/time that the solution will be unavailable to provide contracted system strength services (if any)	
Additionality of system strength services (after 2 December 2025 only)	Existing generators	During the time starting from 1 December 2025 only, indicate how the proposed solution will provide additional system strength services, beyond what is already likely to be available as a result of electricity market dispatch	

Economic

The RIT-T is a whole-of-market economic benefits test which seeks to identify the transmission investment option(s) that maximises net market benefits – which may include network and/or non-network solutions. In August 2020 the Australian Energy Regulator (AER) published an update to its RIT-T Application Guidelines³ which clarified that RIT-T analysis should reflect total costs and market-wide benefits of credible non-network options (a change from the previous approach, in which costs of non-network options were estimated based on costs that could be expected in a tender process). As a result, in this EOI ElectraNet is seeking information about both the expected *economic cost* (regardless of ownership) and the expected *contract price* of proposed non-network options.

Note: Existing and committed assets are considered to have no capital costs (although modifications to existing facilities may include incremental capital investment which should be included).

Parameter	Applicable technology	Description	Response
Available to meet all or part of the system strength shortfall (from 2 December 2025 onwards)	All	Yes/no Please specify expected availability dates during this period	
Available to meet the System Strength Rule Change (on or after 2 December 2025)	All	Yes/no Please specify expected availability dates during this period	
Service start date	All	Proposed start date for providing the system strength service to ElectraNet	
Service end date	All	Proposed end date for providing the system strength service to ElectraNet	

³ AER, 2020, Final decisions – Guidelines to make the Integrated System Plan Actionable, p25, <https://www.aer.gov.au/system/files/AER%20-%20Final%20decision%20-%20Guidelines%20to%20make%20the%20ISP%20actionable%20-%202025%20August%202020.pdf>

Parameter	Applicable technology	Description	Response
Capital cost	All	<p>Total capital cost (regardless of ownership)⁴ for the proposed solution, including costs of plant/equipment, land, civil works, grid connection assets and development costs.</p> <p>If possible, please reflect the actual spend profile for the project (otherwise, lump sum).</p> <p>These costs must exclude a rate of return on capital, and should not subtract any:</p> <ul style="list-style-type: none"> • Expected payments from ElectraNet • Expected payments or revenues from energy (and related) markets • External funding contributions (e.g. grants) <p>Existing or committed assets are considered to have zero capital cost (i.e. are a sunk cost). However, capital costs associated with modifying or upgrading existing facilities to provide system strength services should be included.</p>	
Committed project	New solutions	<p>Yes/no</p> <p>Will the proposed system strength services be provided by assets that meet the definition of ‘committed project’ under the AER’s RIT-T Application Guidelines, using the following criteria:</p> <p>a) The proponent has obtained all required planning consents, construction approvals and licenses, including completion and acceptance of any necessary environmental impact statement</p> <p>b) Construction has either commenced or a firm commencement date has been set</p> <p>c) The proponent has purchased/settled/acquired land (or commenced legal proceedings to acquire land) for the purposes of construction</p>	

⁴ As per RIT-T guidelines, capital costs are considered \$0 for existing or committed assets, and for new assets the total capital cost of the underlying resource for the non-network solution (i.e. regardless of ownership).

Parameter	Applicable technology	Description	Response
		<p>d) Contracts for supply and construction of the major components of the necessary plant and equipment (such as generators, turbines, boilers, transmission towers, conductors, terminal station equipment) have been finalised and executed, including any provisions for cancellation payments</p> <p>e) The necessary financing arrangements, including any debt plans, have been finalised and contracts executed.</p>	
External contributions	New projects	Has the project that is proposed to provide system strength services received any external funding (or is expected to receive external funding) such as from ARENA or government?	
Fixed operating cost	All	Annual fixed operation and maintenance (FOM) costs of the underlying resource	
Variable operating cost	All	Expected running costs (\$/MWh or \$/hour) of the underlying resource, including fuel costs and variable operations and maintenance (VOM)	
Greenhouse gas emissions (scope 1)	All	Estimated scope 1 greenhouse gas emissions from providing system strength services (tCO ₂ e/MWh or tCO ₂ e/hour)	
Greenhouse gas emissions (scope 2)	All	Estimated scope 2 greenhouse gas emissions from providing system strength services (tCO ₂ e/MWh or tCO ₂ e/hour)	
Project benefits	All	Beyond system strength services, describe other services that the assets/project will provide in energy and related markets (e.g. wholesale energy market, ancillary services markets, other network support services).	
Expected system strength contract price (paid by AEMO and/or ElectraNet)	All	<p>Proposed fees payable for the provision of system strength services. The fee structure should include the following components (in line with the draft OSM structure):</p> <ul style="list-style-type: none"> • Establishment Fee: one-off setup cost, if applicable. 	

Parameter	Applicable technology	Description	Response
		<ul style="list-style-type: none"> • Availability Fee: monthly payment for the service to be made available to ElectraNet. This is intended to cover fixed costs for providing the service. • Enablement Fee: \$ per event, intended to cover the cost of the service being enabled/activated. • Variable Fee: \$/MWh fee to operate at the minimum stable operating level for synchronous generators, or \$/hour for other solutions <p>Please specify whether fees are in real or nominal terms, and any indexation methodology that applies.</p>	

Other supporting information to be provided

Please also provide other relevant information that ElectraNet should consider in its assessment. This may include:

- Technical specifications of the service/technology/equipment being offered.
- Details of any material assumptions used to prepare your submission to the [EOI](#), including in relation to the legal terms provided in Appendix A.
- Evidence of the capability and capacity to deliver the proposed non-network option to ElectraNet, including:
 - experience in delivering system strength or related services;
 - expected project delivery timeframes, where relevant; and
 - evidence of technical maturity and economic feasibility (cost-effectiveness) of proposed solution.

EOI submissions

ElectraNet invites you to propose solution(s) that can meet, or help to meet, ElectraNet’s system strength requirements for the SA power system.

EOI proposals and the Returnable Schedule (this form) are to be emailed to consultation@electranet.com.au **no later than 6pm, 30 January 2024.**

