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ZCEF001

BY EMAIL

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To whom it may concern,

Review of Power System Data Communication Standard – Stakeholder Submission

1 Introduction

- 1.1 We refer to the 'Review of NEM Power System Data Communication Standard' issues paper published by AEMO in February 2022 (**Issues Paper**). This letter is a stakeholder submission on behalf of the SA Water Corporation (**SA Water**) in relation to the Issues Paper.
- 1.2 SA Water is South Australia's leading provider of water and sewage services, providing regulated water and wastewater services to more than 1.7 million people throughout the State. Wholly owned by the Government of South Australia, we have been working to ensure a reliable supply of safe, clean water and a dependable sewerage system for more than 160 years.
- 1.3 To support the provision of regulated water and wastewater services, SA Water is one of the largest individual users of electricity in South Australia, operating facilities at more than 1,800 connection points across a wide spectrum of electricity loads. The combination of high energy usage required to provide water and wastewater services and the large geographical spread of our customer base mean that SA Water has been, and will continue to be, reliant on the efficient operation of the National Electricity Market (**NEM**) to support the delivery of essential services to our customers at the lowest possible price.

2 ZCEF Project

- 2.1 Our Zero Cost Energy Future project (**ZCEF Project**), which remains under development as at the date of this letter, involves an investment of over \$300 million in solar photovoltaic panels and energy storage to keep water service charges as low and stable as possible, and further ties SA Water to the ongoing efficient future of the NEM.
- 2.2 Through this strategic generation investment, we have sought to reduce our net electricity costs, generating electricity to meet the needs of our major sites and selling any excess electricity into the NEM to offset electricity purchases at other sites and purchases at times where our generation assets are unable to support our full demand.
- 2.3 Whilst developing the ZCEF Project, SA Water has had extensive dealings with the incumbent TNSP (ElectraNet Pty Limited) and DNSP (SA Power Networks) in South Australia in relation to the connection of 5MW+:
 - (a) embedded generation facilities at multiple locations within SAPN's distribution network; and
 - (b) utility scale generation facilities at multiple locations within ElectraNet's transmission network.
- 2.4 As part of this development process, we have made several directly relevant observations in relation to the matters set out in the Issues Paper. A number of these observations (and our related submissions in relation to the questions in the Issues Paper) are set out in the Attachment to this letter.

3 Submissions

- 3.1 At this stage we have not made submissions in the Attachment in relation to all questions raised in the Issues Paper. In particular, we note that we have not commented on the more 'technical' questions contained in the Issues Paper in detail, such as those relating to data quality, security and latency.
- 3.2 Rather, our submissions focus largely on the specific issues that have caused, and continue to cause, challenges for SA Water in connecting its generation facilities to the grid.
- 3.3 These issues largely relate to the parts of the Issues Paper which question whether there is a need for the Power System Data Communication Standard (**Standard**) to better define the roles and (operational and financial) responsibilities of the parties which have 'data communication facilities' (**DCFs**) forming all or part of the communication path between the generator itself and AEMO.
- 3.4 We submit that reform is required to the Standard in this area and that the need for such reform will become more obvious moving into the future as the technology mix connected to the power system (and the data streams required by AEMO to operate and manage the power system as a result) continues to develop and become more complex.
- 3.5 We believe greater clarity in the Standard as to the following items, will allow the connection process to become faster, more reliable and more cost effective for all registered participants who are involved in the connection process (which aligns directly with the national energy objective):
 - (a) the types of "Operational Data" required to be transferred by connecting parties to and from AEMO (for compliance with the Standard and Chapter 4 / 5 of the NER) and how they are defined;
 - (b) the roles of different market participants (i.e., different 'data communication providers' (**DCPs**)) in establishing compliant ICCP links between connecting (or connected) parties and AEMO; and
 - (c) the role of the DNSP and the TNSP in the Chapter 5 connection process. Specifically, the need for such NSPs to play a more proactive role in ensuring that connecting parties are informed of the NSP's DCP capabilities early in the connection process.
- 3.6 We take this opportunity to thank AEMO for considering our submissions. We will be very happy to engage further with AEMO and other interested stakeholders in relation to our observations and submissions in due course.

Yours faithfully,

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Attachment – SA Water Submissions

Question	SA Water Submission
Key Observations / General	

Background:

- (a) SA Water has recently connected (and continues to be in the process of connecting) a number of 5MW+ generation facilities to the South Australian distribution network and transmission network. A number of these generators are proposed to participate in the FCAS market and therefore must be compatible with AEMO's automatic generator control (**AGC**) system.

Key observations:

- (b) During the process of connecting such generation facilities, it has become apparent to SA Water that:
 - (1) there is no obligation on the DNSP or the TNSP (at the connection enquiry phase in Chapter 5 of the NER) to provide adequate information to connection applicants in relation to its DCP capability, or in relation to the connection applicant's obligations in Chapter 4 (and 5) to establish specific data links between their facilities and AEMO (including data links required for participation in the FCAS market);
 - (2) although, in SA Water's opinion, the Standard together with r 4.11.2 does require all NSPs (i.e., DNSPs and TNSPs alike) to have a Standard compliant ICCP link in place between their network and AEMO which enables AGC (and other generator) signal exchanges, there is a perception that this obligation is not stated with enough clarity in the Standard at the present time to make it clear all NSPs have such an obligation; and
 - (4) there appears to be no simple, informal, methodology in the NER, the electricity transmission code (ETC) or the electricity distribution code (EDC) to provide that where an NSP has such an ICCP link in place, connecting parties are able to obtain some comfort (whether through an informal independent review process or otherwise) that they will be given access to such link for (and on) market based, reasonable rates (and terms).

Cost and delay:

- (c) The issues identified above have caused SA Water to experience significant cost and delay challenges with having certain 5MW+ generation facilities connected to the grid, which challenges have arisen late in the connection process.

Submission summary:

- (d) Due to the power system security and investment efficiency advantages (for all network users) of having fully functional (and Standard compliant) ICCP data links in place between TNSPs, DNSPs and AEMO, and given the likely increase moving into the future of the number of NEM connected generation and BESS facilities which will look to participate in FCAS and other ancillary markets, SA Water submits that the Standard should be amended to place a clear, regulatory obligation on all NSP's (TNSPs and DNSPs alike) to ensure that:
 - (1) they have a Standard compliant ICCP link in place between their network and AEMO at all times (to ensure generators, BESS facilities and load facilities (including demand response providers) connecting to their network have access to a reliable, secure and cost effective AEMO data link at all times);
 - (2) in order to be Standard compliant, the ICCP data link in place between AEMO and each NSP is able to exchange all AGC and all other generator/BESS and load (including demand response) signals as per Chapter 4, 5 and any applicable AEMO guidelines from time to time (including the Standard);
 - (3) adequate information regarding such data links is provided to each connecting party at the connection enquiry phase, together with information relating to the kinds of data which needs to be communicated between the generator/BESS/load and AEMO for access to different markets; and
 - (4) access is granted to such data links on reasonable (and commercial) market-based terms and conditions.

Question	SA Water Submission
3.1.1 Scope and Application of Standard	
<p>Does the Standard need to be more specific on the range of data covered?</p>	<p>The type of data covered by the Standard is, and the relevant definitions used in the Standard are, quite broad. This may have been intentional when the Standard was drafted to ensure the Standard has maximum flexibility, however, wherever possible, our view is that greater clarity should be provided to ensure that all parties reading the Standard fully understand their obligations.</p> <p>As such, SA Water submits that the Standard should:</p> <ul style="list-style-type: none"> (a) clearly specify that the Standard separately covers data exchanges: <ul style="list-style-type: none"> (1) between DNSPs and AEMO; (2) between TNSPs and AEMO; (3) between connecting (or connected parties) and AEMO (including AEMO direct link); (4) between connecting (or connected) parties and DNSPs; and (5) between connecting (or connected) parties and TNSPs; (b) expressly require that all DCFs of all DNSPs and TNSPs (located anywhere in the communication path) have the capability to exchange all: <ul style="list-style-type: none"> (1) (<u>Generator/BESS signals</u>): generator/BESS signals, including AGC signals and all other generator signals as required by r 4.11.1 (a), r 4.11.1 (b) and S5.2.6 of the NER (Generator Signals); and (2) (<u>Load signals</u>): load signals, including demand response signals as required by r 4.11.1 (a), r 4.11.1(c1), and S5.3.9 of the NER (Load Signals), <p>with AEMO for the purpose of assisting and facilitating "Operational Data" exchanges between AEMO and the parties which are connected to the NSP's networks. It should also be drafted in such a manner to provide that such capability must be in place at all times for the NSP to be compliant with its obligations in r 4.11.2.</p>
<p>Does the definition of power system data need to be extended?</p>	<ul style="list-style-type: none"> (a) There does appear to be some circularity with the definition of "Power System Data" and "Other Data" which needs to be clarified (see in particular the reference to Power System Data within the definition of Other Data). (b) In addition, the definition of "Power System Data" needs to be amended to specify (or at least provide examples) the types of data which are intended to fall within this definition, rather than simply referring to 'data concerning plant'. (c) The issue raised in the Issues Paper around this definition not extending to embedded generators seems to be inconsequential in that 'power system data' for plant operating at 220kV or less is covered in the definition of "Other Data". It also seems to be the intent that this includes the same type of data as the definition of Power System Data (and therefore included in the definition of "Operational Data").

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	<p>(d) Regardless, if the intent of the “Power System Data” definition is intended to delineate between TNSP and DNSP, it is noted that the transmission network in South Australia operates at below 132kV in certain locations.</p>
<p>Does the definition of control commands need to be extended?</p>	<p>(a) From SA Water's perspective, this definition is already quite clear.</p> <p>(b) However as mentioned above, wherever possible, greater specificity should be provided to ensure the responsibilities of all DCPs are fully understood and not 'open to interpretation'. As such, to avoid doubt, we believe this definition should be amended to make it clear that this covers all control commands that fall into the “Generator Signals” and “Load Signals” categories mentioned above as a minimum.</p>
<p>3.1.3 Architectural Requirements (1)</p>	
<p>What changes to the current standard are needed to clarify the requirements for DNSPs</p>	<p>(a) SA Water submits that the Standard needs to be amended to specifically require DNSPs and TNSPs (separately) to:</p> <ol style="list-style-type: none"> (1) have their own Standard compliant ICCP link (capable of exchanging all “Generator Signals” and “Load Signals” as defined above) in place between their network and AEMO at all times (regardless of the number of connecting parties which are using such link); and (2) grant access to such ICCP link to connecting (or connected) parties to enable them to satisfy their obligations in the NER to exchange all such “Operational Data” with AEMO on reasonable, market benchmarked terms and conditions upon request. <p>(b) From SA Water's perspective, a DNSP may choose to establish such a link through the relevant TNSP in certain instances in order to be more cost effective, however, this doesn't necessarily need to be addressed in the Standard (provided that it is clear the DNSP must have the required AEMO link in place).</p> <p>(c) We submit that the key in this regard is drafting the Standard in such a way as to ensure the embedded connecting party only has 1 contractual interface for access to an AEMO data link (with the NSP whose network they are connecting into) and that it does not need to deal with the DNSP and TNSP separately in order to establish its required ICCP link with AEMO.</p> <p>(d) We believe the above changes to the Standard (in paragraph (a) above) are needed, because they leverage existing telco assets and promote efficient investment in the NEM, by removing the need for all connecting parties to individually install the DCFs required to establish direct ICCP links with AEMO. It also promotes power system security, by ensuring that connecting parties have access to an established, reliable and secure dual path ICCP link with AEMO at all times.</p> <p>(e) We also submit that the Standard should provide that all NSPs must provide a connection party with information (at the connection enquiry response phase) regarding:</p> <ol style="list-style-type: none"> (1) the types of Generator Signals and Load Signals which may need to be exchanged with AEMO by the connecting party's facility; (2) the NSP's capability to assist the connecting party with the exchange of Generator Signals and Load Signals as a DCP; and

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	<p>(3) the rates and terms upon which the relevant NSP will provide access to its ICCP link to enable the connecting party to satisfy its obligations under the NER.</p> <p>(f) If it is not appropriate for such requirement/s (i.e., regarding the type of information to be provided at connection enquiry phase and the rates and terms on which access is to be granted) to be inserted into the Standard, SA Water suggests this should be considered as part of a separate rule change process.</p> <p>(g) We submit that providing more information at the time of connection is important, as we understand numerous connecting parties assume that the required ICCP link will be established by the NSP under their relevant connection agreement (which seems logical), and this often causes connection delays and unexpected costs to be incurred late in the connection process.</p> <p>(h) It would also have a positive impact if the charges proposed to be charged by the NSP for access, to the extent that they were recoverable by the NSP as an unregulated service, are able to be referred to an independent expert (for market review on a relatively informal basis) to provide the connecting party with comfort that the rates proposed are market based/reasonable.</p>
<p>3.1.5 Interfacing</p>	
<p>What additional detail is required in the Standard to provide more clarity on boundary of both, operational and financial responsibilities?</p>	<p>(a) SA Water submits that when a connecting party connects its facility to an NSP's network, the NSP should provide appropriate points of interface for secondary systems, including systems capable of exchanging "Operational Data" signals between the connecting party and AEMO at the point where the connecting party's facility connects with the regulated network (Telco Interface).</p> <p>(b) The Standard should provide that the NSP is financially and operationally responsible for all DCF assets located on the network site of the Telco Interface, all the way through to AEMO as a regulatory obligation which must be complied with by all NSPs to enable the costs associated with such assets to be incurred by the NSP as a regulated expense (i.e., for the benefit of all regulated network users).</p> <p>(c) The Standard should also provide that the NSP may charge connected or connecting parties reasonable and market benchmarked rates for access to its ICCP link, provided that all relevant information regarding its ICCP link and access to such link (as mentioned above, is provided to the connecting party at the connection enquiry phase of their connection, so they have ample time to consider all available options).</p> <p>(d) The connecting party should have financial and operational responsibility on their facility side of such Interface Point.</p>
<p>3.1.8 – Data Latency</p>	
<p>Should the Standard include a specific requirement regarding data latency? If so, what would be the implications for stakeholders?</p>	<p>This needs to be defined and be a realistic value for generators / market participants to achieve, and needs to separately cover ICCP links between connecting/connected parties to AEMO via:</p> <p>(a) direct AEMO link;</p> <p>(b) TNSPs only;</p> <p>(c) DNSPs only;</p>

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	(d) two NSPs i.e., DNSP to TNSP to AEMO, so that all options are available and not excluded due to unachievable data latency.
3.1.10 – Security	
What specific obligations regarding maintenance of security should be included in the Standard and what would be the implications of this?	Security requirements for any ICCP direct link between AEMO and connecting/connected parties needs to be defined.
3.2.2 – Architectural Requirements (2)	
What changes to the current NEM power system data communications structure are likely to be required? Are there different options for such changes?	The architecture for AEMO for each type of connecting/connected party ICCP link mentioned above (see our comments re Section 3.1.8) needs to be shown in a separate topology diagram.