

7 October 2022



Mr Daniel Westerman  
Chief Executive Officer & Managing Director  
Australian Energy Market Operator  
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Dear Mr Westerman

**Review of NEM Power System Data Communications Standard Draft Report and Determination**

Energy Queensland Limited (Energy Queensland) welcomes the opportunity to provide comment to the Australian Energy Market Operator (AEMO) on the Review of Power System Data Communications Standard Draft Report and Determination (Draft Report and Determination). Energy Queensland's comments on the Draft Report and Determination are provided in Attachment 1.

This submission is provided by Energy Queensland, on behalf of its related entities, including distribution network service providers, Energex Limited and Ergon Energy Corporation Limited, retailer, Ergon Energy Queensland Pty Ltd, and affiliated contestable business, Yurika Pty Ltd.

Should AEMO require additional information or wish to discuss any aspect of this response, please contact me on 0438 021 254.

Yours sincerely

A handwritten signature in black ink that reads "C. G. Martin".

Charmain Martin  
**Acting Manager Regulation**

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**Energy Queensland’s comments on NEM Power System Data Communications Standard Draft Report and Determination**

No.	Section No.	Section Heading	Energy Queensland’s Comment
1	1.2.1	Glossary	<p>Energy Queensland considers that further refinement of the following definitions is required:</p> <p><b>Operational Data</b> – The definition of “Operational Data” previously captured all four types of data listed below. However, reference is made to “Operational Data” in some sections (for example, section 5.2.1) which excludes High Resolution Data. Therefore, it is recommended that “High Resolution Data” is removed from the definition of “Operational Data” to avoid confusion.</p> <p><b>Primary System Security Data</b> – It is unclear why the “at least 220kV” reference is included. It is our understanding that 132kV would be the minimum level of interest, given the transmission network includes voltages at that level.</p> <p><b>Secondary System Security Data</b> - To a Network Service Provider (NSP), “Secondary System” refers to devices such as protection relays, remote terminal units and tap changers, i.e. items that control / monitor primary plant. The use of the term “Secondary System” may therefore result in confusion.</p> <p><b>High Resolution Data</b> – It is suggested that “a typical sample rate of 20 millisecond intervals” should be replaced by “50 samples per second” to provide greater clarity. In addition, the definition is limited to devices with GPS clock synchronisation, whereas there are multiple time sources available that can achieve the required accuracy. It is therefore suggested that a timestamp resolution requirement should instead be included in the definition, such as “microsecond accuracy” (preferably no tighter tolerance than is actually required).</p>

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			<p><b>Secure Private Network</b> – The requirements set out in section 5.1(d) suggest that “Secure Private Network” is intended to exclude any public carrier network. However, the current wording for this definition could be interpreted to also include Virtual Private Networks or other end-to-end encrypted communication paths over public or multi-user commercial telecommunications infrastructure. In refining this definition, care should also be taken to not exclude standard aggregation of telecommunications channels (PDH, SDH, MPLS, etc.) that will occur on any communications network of significant size.</p>
2	1.4.1(a)	NSP Obligations	It is Energy Queensland's understanding that HSM and PMU data collected by the NSP will not be able to transmit the microsecond accuracy timestamp required via the ICCP protocol.
3	1.4.1(b)(iii)	NSP Obligations	It is our understanding that there is no way to transmit controls across more than one ICCP link in series without customer application software or customer DMS / EMS logic. Therefore, the secondary option of the DNSP going via the TNSP is not suitable for controls unless an alternative protocol, such as DNP3, is used between the DNSP and TNSP.
4	1.5	Overview of Data Communication Facilities	Figure 1 (General Structure of DCF) does not reflect the option as outlined in section 1.4.1(b)(i) of the DNSP (Intervening Facility 2) having direct connections to each of the AEMO control centres.
5	2.1(c)	Capability to transmit and receive Operational Data	Document formatting error - Error! Reference source not found.
6	2.2(f)	Representation of data	Further clarity is required as to the meaning of “default state must be set to good”.
7	2.3(a)	Age of data	Table 2 (End to End Time for data to be available for transmission to AEMO) – The status indications for Dispatch Data and Primary System

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			<p>Security Data have lowered significantly from the previous Standard. It is not clear that these status indications are practical and would need to be tested. However, this may not be an issue if we move to a direct connection to AEMO rather than via the TNSP.</p>
	2.5	Data Accuracy	<p>As written, this requirement would not be feasible to achieve. The combined definition of "True Value" and the wording of this clause means that readings would need to be accurate to within 1%, even when at extremely low levels.</p> <p>Typically, transducers and other acquisition equipment have accuracy specifications related to their full-scale deflection (FSD). To meet normal operational requirements, the full scale is typically set significantly higher (150% or more) than the normal / nominal maximum expected reading so that when problems occur, readings do not clip at full scale (within reason). Taking a feeder current as an example, on a 1200A rated circuit, the full scale may be as high as 2400A. If the analogue-to-digital sampling process has a specification of +/-0.25% of FSD, a reading of 6A is in the noise, yet by the wording of this clause, it would still be necessary to provide +/- 1% accuracy of this 6A reading (+/-0.06A, or 0.0025% of FSD). Typically, at least 0.5% of that 1% allowance is consumed by the current transformer.</p> <p>The usual way to deal with this issue is to limit the window within which the accuracy requirement applies to a band around the normal / nominal value, and accept that unusually high or low readings will be inaccurate.</p> <p>A broad generic specification of +/-1% accuracy is simple and convenient for data consumption, but will also rule a large number of existing measurands as unfit for supply to AEMO. Our current standard for protection instrument transformers alone consumes that entire accuracy allowance, and metering quantities for Real and Reactive power (other than statistical metering</p>

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			<p>and revenue metering) are specified for <math>\pm 5\%</math> or better (with these having a compounded error from being calculated from two measured quantities).</p> <p>If AEMO is instead able to specify accuracy at the levels actually needed to perform its role and commensurate with the importance of the measurand, then significant unnecessary costs may be avoided.</p>
	4.4.1 (e)	Physical security and computer network security – General obligations	The scope of the matters that could fall within this consultation requirement could be extremely broad. To prevent wasted effort by all parties, perhaps a guideline on the assessed consequence and likelihood of the risk to security would enable participants to only consult with AEMO on the matters AEMO considers to be significant enough to warrant its involvement.
	4.4.2(a)	Communications between RME/RCE and Intervening Facilities	Document formatting error - cross reference to "(d)5.1(d)" should be amended to "5.1(d)".
	4.4.2(b)(ii)	Communications between RME/RCE and Intervening Facilities	<p>This section as written effectively limits the communications to encrypted communications (which is possible but likely to be prohibitively expensive).</p> <p>Requiring encryption rules out any serial data communications or low-bandwidth wireless communications and removes most of the benefits of the use of DNP3-SAv5.</p> <p>The principle behind the secure authentication developed for DNP3 was that SCADA data is typically not considered to be confidential. The additional processing and communications throughput overhead imposed by encryption typically serves little benefit in SCADA, and makes commissioning, fault diagnosis and maintenance significantly more complex, since a</p>

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			<p>sanctioned "person-in-the-middle attack" needs to be performed to observe the meaning of the traffic independently of the end devices.</p> <p>If the information is considered confidential only because it may be commercially sensitive rather than a risk to system security, then perhaps a better approach would be to permit / allow for exemption from encryption where only a Secure Private Network is used and the DCPs involved are the parties at risk and agree the cost of encryption is not justified by the commercial risk.</p>
8	5.2.1	NSP Intervening Facilities	Operational Data - Refer to comments provided in issues 1 and 2 above. Section 1.7 dot point 4 indicates that the HSM and PSU data is excluded, whereas they are included in the definition of "Operational Data".
9	6.5(a)	Testing	In our view, use of the term "test" in this section may not be appropriate. It may be more appropriate to refer to "verification" of NSP's data against AEMO's data.
10	6.5(e)	Testing	Further clarity is required as to whether AEMO will be providing a template for the report referred to in this section.
11	7	PMU/HSM devices	Energy Queensland considers that the relevant protocol should be specified in this Standard. Otherwise, PMU and HSM devices should be excluded or the discussion around them moved to a non-normative appendix where it is clear that they are not part of the requirements for compliance.
12	8.1(a)	Consequences of non-compliance	It is noted that consequences (b), (c) and (d) apply to the generator but it is unclear what enforcement action would be taken if the discrepancy is with an Intervening Facility.
13	9	Transitional Arrangements	Document formatting error - Error! Reference source not found.

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14	9.1(a)	Definitions, application and maximum timeframes	Document formatting error - Error! Reference source not found.
15	9.1(a)	Definitions, application and maximum timeframes	The effective date provided is 3 April 2023 which is different to the effective date of 1 April 2023 provided in section 9.
16	9.1(a)(i)	Definitions, application and maximum timeframes	<p>In our view, "12 months after the start of the next regulatory control period after the effective date for which the AER had not made a final distribution determination or transmission determination (as applicable) prior to the effective date" could be confusing.</p> <p>This timeframe may also not be achievable given the significant impacts of the proposed changes, shortage of appropriately skilled workers and ongoing international supply issues for items dependent on semiconductors.</p>
17	9.2(d)	Transition plan	Document formatting error - Error! Reference source not found.