AES | CSF
Australian Energy Sector | Cyber Security Framework

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AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

Australian Energy Sector Cyber Security Framework (AESCSF)

Electricity Criticality Assessment Tool (E-CAT)

2022 *Program - Minor Refresh*

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Purpose

This document is made available by The Department of Industry, Science, Energy and Resources (DISER) and The Australian Energy Market Operator (AEMO) to provide information about the 2022 Australian Energy Sector Cyber Security Framework (AESCSF) Program.

This document accompanies other general guidance materials made available to Australian energy market Participants in the electricity, gas, and liquid fuels sub-sectors.

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Conventions used in this document

For clarity when reading this document, key terms are indicated with a capital letter. Each key term has a specific definition that the reader should consider. An example of this is Participants, as defined above.

Key terms are defined centrally in the AESCSF Glossary which is available separately.

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1. Overview

The Electricity Criticality Assessment Tool (E-CAT) has been designed to assess the relative criticality of entities participating in the Australian electricity sub-sector. This includes, but is not limited to, the electricity markets operated by the Australian Energy Market Operator (AEMO) (including the National Electricity Market [NEM] and the Wholesale Electricity Market [WEM]).

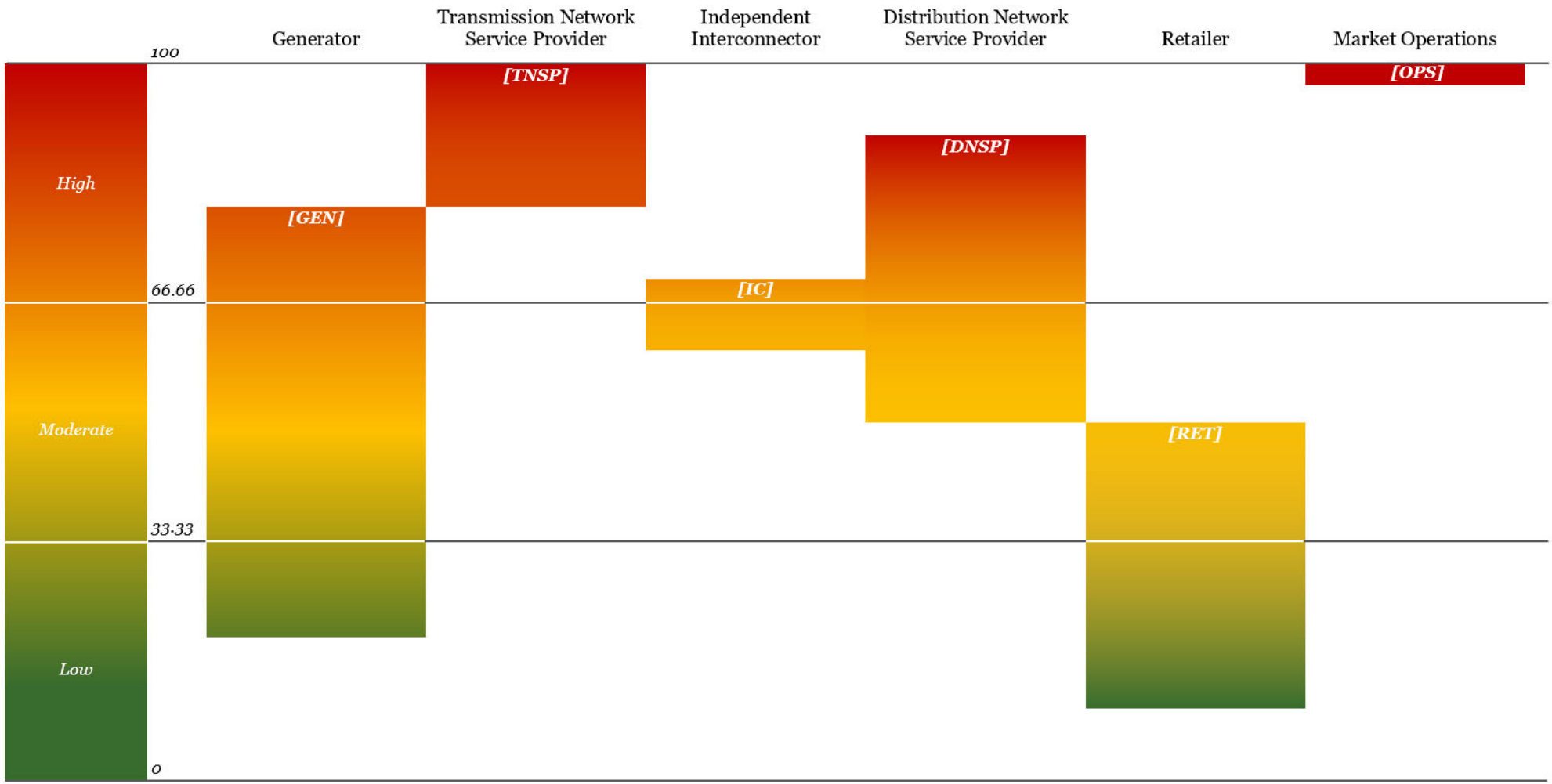
The primary objective of the tool is to place all participating entities on a single scale for the purpose of reporting, benchmarking, and determining the applicable target state maturity guidance from the Australian Cyber Security Centre (ACSC).

Based on consultation with AEMO, industry and government, each electricity market role has been assigned a criticality band on the scale. Key criticality indicators for each electricity market role have been established to stratify participating entities within the role's criticality bands. These indicators are posed as questions, some of which are answered as "Yes" or "No", and some of which are a single selection from a pre-defined range.

Participating entities are placed within applicable role criticality bands based on their responses to the questions. This placement determines the criticality rating (High, Medium, Low) for each applicable role. An entities' overall criticality rating is the highest rating from across all applicable roles.

Additional criticality indicators to further explore battery energy storage systems (BESS) are in discussion and will be trialled as a part of the 2022 AESCSF Program. Further information on these indicators, and their subsequent questions, will be added to this document as appropriate. Contact aescsf@aemo.com.au for more information or feedback on key criticality indicators for BESS.

1.1. Criticality Bands by Market Role



2. Generator (E-GEN)

ID	Question	Context and Guidance	Response Options	Weight
E-GEN.0	**Is your organisation an electricity generator?**	**A Generation Facility produces electricity from sources including coal, gas, solar, water, wind, biomass, and geo-thermal. For the purpose of this section, a Generation Facility is synonymous with a Power Station.** **According to the Australian Energy Regulator (AER), there are many Generation Facilities in the various Australian electricity markets. These markets have varied trading rights and ownership. Some of these Facilities provide continuous (scheduled) generation capacity, whereas others provide non-continuous (non-scheduled) generation capacity. Non-scheduled generation capacity is usually dispatched in response to electricity demand from Customers.**	**a) Yes** **b) No**	**100%**
E-GEN.1	What is your organisation's maximum dispatchable generation capacity in Megawatts (MW)?	The maximum dispatchable generation capacity should be calculated considering the type of generation facility that your organisation operates. Your organisation may have one or many generation assets within a generation facility. Where your organisation operates a generation asset that provides: • Scheduled generation, your maximum dispatchable generation capacity refers to your maximum scheduled generation capacity. • Semi-scheduled or non-scheduled generation, your maximum dispatchable generation capacity refers to the nameplate capacity. Maximum dispatchable generation capacity should be calculated as the sum of the maximum dispatchable generation assets in scope.	a) Less than 500 MW b) Between 500 and less than 2,500 MW c) Between 2,500 and less than 5,000 MW d) Between 5,000 and less than 7,500 MW e) More than 7,500 MW f) Unsure	35%

ID	Question	Context and Guidance	Response Options	Weight
E-GEN.2	On average over the last 3 financial years, what percentage of the year was that dispatchable capacity available?	The relevant period for this calculation is the three (3) most recent full financial years (1 July to 30 June). Do not include data for the current incomplete financial year. The average should be calculated as follows: • For each of the three (3) financial years; determine the number of days where your organisation's dispatchable capacity was available, divided by 365 (number of days in a non-leap year). • The sum of three yearly averages, divided by three (for example, (77% + 80% + 75%] / 3) For the purpose of this calculation: • Any extended (either planned or unplanned) periods of downtime for maintenance or otherwise should be considered days when the capacity was not available. • For renewable generation, any periods of downtime arising from the unavailability of an energy source should be considered days when the capacity was not available.	a) Less than 25% b) Between 25% and less than 50% c) Between 50% and less than 75% d) More than 75% e) Unsure	10%
E-GEN.3	In how many regions does your organisation operate more than 400 Megawatts (MW) of dispatchable generation capacity?	For the purpose of this question, a region is synonymous with an Australian State or Territory. *Refer to GEN.1 to determine dispatchable generation capacity.*	a) None b) 1 c) 2 d) 3 e) 4+ f) Unsure	5%

ID	Question	Context and Guidance	Response Options	Weight
E-GEN.4	On average over the last 3 financial years, how many Gigawatt Hours (GWh) did your organisation dispatch?	The relevant period for this calculation is the 3 most recent full financial years (1 July to 30 June). Do not include data for the current incomplete financial year. The average should be calculated as follows: • The sum of dispatch for each day, totalled by year (for example, 2 MWh per day for 365 days = 730 MWh) • The sum of three yearly totals, divided by three (for example, [730 + 730 + 730] / 3) *Note:* • *1 Megawatt hour (MWh) is equal to 0.001 Gigawatt hours (GWh). To convert MWh into GWh, divide the number of MWh by 1000.*	a) Less than 500 GWh b) Between 500 and less than 5,000 GWh c) Between 5,000 and less than 15,000 GWh d) Between 15,000 and less than 25,000 GWh e) More than 25,000 GWh f) Unsure	20%
E-GEN.5	Are any of your organisation's generation assets considered Synchronous Machines?	A strong power system can respond better to disturbances than a weak one. Because of how the power system is designed, synchronous machines - like coal, gas, hydro generators, synchronous condensers and some large-scale batteries - makes the power system operate smoother and stronger . In any part of the power system where there is lots of non-synchronous generation, such as solar and wind without battery storage , that local area can become weaker and potentially unstable. To strengthen a weaker part of the system, enough synchronous machines have to be operating alongside the non-synchronous generation. If more non-synchronous generation is operating, the contribution of synchronous machines also needs to increase, to keep the proportion right. *Source: Adapted from AEMO, "Keeping the power system strong", Published 08 February 2018*	a) Yes b) No	5%

ID	Question	Context and Guidance	Response Options	Weight
E-GEN.6	Is your organisation a registered Frequency Control Ancillary Services (FCAS) provider?	Ancillary services are used by AEMO in the NEM and the WEM to manage the power system safely, securely, and reliably. These services maintain key technical characteristics of the system, including standards for frequency and voltage control, network support and control and system restart processes. AEMO operates eight separate ancillary services markets in the NEM and five in the WEM under agreements with services providers. Payments for ancillary services include payments for availability and delivery of services. Ancillary services can be grouped under one of the three main categories: • Frequency Control Ancillary Services (FCAS) • Network Support and Control Ancillary Services (NSCAS); or • System Restart Ancillary Services (SRAS). *Source: Adapted from AEMO, "Guide to Ancillary Services in the NEM", Published November 2021.*	a) Yes b) No	2%
E-GEN.6.1	Does your organisation provide Regulation or Fast Contingency FCAS?	*Refer to GEN.6*	a) Yes b) No	8%[1]
E-GEN.7	Is your organisation a registered System Restart Ancillary Services (SRAS) provider?	*Refer to GEN.6*	a) Yes b) No	10%
E-GEN.8	Does your organisation have any Network Support Agreements?	This includes Network Support and Control Ancillary Services (NSCAS) (from GEN.6) and any other Network Support Agreements directly with a Distribution Network Services Provider (DNSP) or Transmission Network Service Provider (TNSP).	a) Yes b) No	5%

[1] This weight is only included in your calculated Criticality Assessment Result if GEN.6 is answered as “Yes”

ID	Question	Context and Guidance	Response Options	Weight
E-GEN.9	In which region (or regions) does your organisation provide this service?	This information is used for reporting purposes only and does not influence your organisation's criticality. Select all regions that apply.	a) Australian Capital Territory (ACT) b) New South Wales (NSW) c) Queensland (QLD) d) South Australia (SA) e) Tasmania (TAS) f) Victoria (VIC) g) Western Australia (WA) h) Northern Territory (NT)	0%

3. Transmission Network Service Provider (E-TNSP)

ID	Question	Context and Guidance	Response Options	Weight
E-TNSP.0	**Is your organisation an electricity Transmission Network Service Provider (TNSP)?**	**A Transmission Network Service Provider TNSP operates transmission lines which carry electricity across long distances, from one or many Generators to a Distribution Network Service Provider (DNSP). Some commercial customers (such as large industrial users) take their electricity directly from a TNSP.**	**a) Yes** **b) No**	**100%**
E-TNSP.1	How many Gigawatt Hours (GWh) of electricity did your organisation transport last financial year?	This refers to the sum of electricity transported during the most recent full financial year (1 July to 30 June). Do not include data for the current incomplete financial year.	a) Less than 10,000 GWh b) Between 10,000 and less than 20,000 GWh c) Between 20,000 and less than 30,000 GWh d) More than 30,000 GWh e) Unsure	80%
E-TNSP.2	What is the combined Nominal Capacity (in Megawatts (MW)) of all Interconnectors that your organisation operates?	Nominal Capacity refers to the optimal capacity for an Interconnector when there are no transmission outages. Actual Capacity refers to the achievable transfers at any point in time. Actual Capacity may differ from the Nominal Capacity. *Source: AEMO, "Interconnector Capabilities for The National Electricity Market", Published November 2017*	a) Not Applicable b) Less than 500 MW c) Between 500 and less than 1,000 MW d) Between 1,000 and less than 1,500 MW e) More than 1,500 MW	20%

ID	Question	Context and Guidance	Response Options	Weight
E-TNSP.3	In which region (or regions) does your organisation provide this service?	This information is used for reporting purposes only and does not influence your organisation's criticality. Select all regions that apply.	a) Australian Capital Territory (ACT) b) New South Wales (NSW) c) Queensland (QLD) d) South Australia (SA) e) Tasmania (TAS) f) Victoria (VIC) g) Western Australia (WA) h) Northern Territory (NT)	0%

4. Interconnector (E-IC)

ID	Question	Context and Guidance	Response Options	Weight
E-IC.0	**Does your organisation operate an electricity Interconnector that is independent of a Transmission Network Service Provider (TNSP)?**	**The electricity transmission networks across the eastern Australia jurisdictions are connected to one another to create the National Electricity Market (NEM). This is made possible through a combination of electricity Interconnectors operated by Transmission Network Service Providers (TNSPs) and Interconnectors operated independently.**	**a) Yes** **b) No**	**100%**
E-IC.1	What is the combined Nominal Capacity (in Megawatts (MW)) of all Interconnectors that your organisation operates?	Nominal Capacity refers to the optimal capacity for an Interconnector when there are no transmission outages. Actual Capacity refers to the achievable transfers at any point in time. Actual Capacity may differ from the Nominal Capacity. *Source: AEMO, "Interconnector Capabilities for The National Electricity Market", Published November 2017*	a) Less than 200 MW b) Between 200 and less than 450 MW c) Between 450 and less than 700 MW d) More than 700 MW e) Unsure	80%
E-IC.2	Does your organisation operate any Interconnectors with a Nominal Capacity of more than 400 Megawatts (MW)?	This refers to the Nominal Capacity of single Interconnector, not the combined Nominal Capacity of all Interconnectors that your organisation operates. If the Interconnector is bi-directional, your response should consider the maximum Nominal Capacity of either direction only, not the sum of both directions.	a) Yes b) No	20%
E-IC.3	In which region (or regions) does your organisation provide this service?	This information is used for reporting purposes only and does not influence your organisation's criticality. Select all regions that apply.	a) Australian Capital Territory (ACT) b) New South Wales (NSW) c) Queensland (QLD) d) South Australia (SA) e) Tasmania (TAS) f) Victoria (VIC) g) Western Australia (WA) h) Northern Territory (NT)	0%

5. Distribution Network Service Provider (E-DNSP)

ID	Question	Context and Guidance	Response Options	Weight
E-DNSP.0	**Is your organisation an electricity Distribution Network Service Provider (DNSP)?**	**A Distribution Network Service Provider (DNSP) operates distribution transformers which convert high-voltage electricity to low-voltage electricity that is ready for distribution, and distribution lines that carry low voltage electricity to customers. Retailers work with a DNSP to connect a customer to the electricity grid.**	**a) Yes** **b) No**	**100%**
E-DNSP.1	How many Customers (Number of National Metering Identifiers (NMIs)) does your organisation supply electricity to?	This refers to the number of Customers that your organisation supplies electricity to, based on the number of National Metering Identifiers (NMIs) that are connected to your organisation's network.	a) Private DNSP - Primarily Industrial Customers b) Less than 500,000 c) Between 500,000 and less than 1,000,000 d) Between 1,000,000 and less than 2,000,000 e) More than 2,000,000 f) Unsure	40%
E-DNSP.2	How many Gigawatt Hours (GWh) of electricity did your organisation transport last financial year?	This refers to the sum of electricity transported during the most recent full financial year (1 July to 30 June). Do not include data for the current incomplete financial year.	a) Less than 10,000 GWh b) Between 10,000 and less than 15,000 GWh c) Between 15,000 and less than 25,000 GWh d) More than 25,000 GWh e) Unsure	40%

ID	Question	Context and Guidance	Response Options	Weight
E-DNSP.3	How many Critical and Commercial Customers does your organisation serve?	Of the total number of Customers that your organisation supplies electricity to (from DNSP.1), how many of these are considered Critical and Commercial? *Note:* • *Please refer to the glossary for further information regarding Critical and Commercial Customers.*	a) Less than 2,500 b) Between 2,500 and less than 5,000 c) Between 5,000 and less than 7,500 d) More than 7,500 e) Unsure	20%
E-DNSP.4	In which region (or regions) does your organisation provide this service?	This information is used for reporting purposes only and does not influence your organisation's criticality. Select all regions that apply.	a) Australian Capital Territory (ACT) b) New South Wales (NSW) c) Queensland (QLD) d) South Australia (SA) e) Tasmania (TAS) f) Victoria (VIC) g) Western Australia (WA) h) Northern Territory (NT)	0%

6. Retailer (E-RET)

ID	Question	Context and Guidance	Response Options	Weight
E-RET.0	**Is your organisation an electricity Retailer?**	**An electricity Retailer sells electricity to Customers, and liaises with the appropriate Distribution Network Service Provider (DNSP) to ensure Customer connection to the electricity grid. Some Customer connections utilise Advanced Metering Infrastructure (AMI), which automates the connection and disconnection process of a Customer.**	**a) Yes** **b) No**	**100%**
E-RET.1	How many Customers (Number of National Metering Identifiers (NMIs)) does your organisation serve?	This refers to the number of Customers that your organisation supplies electricity to, based on the number of National Metering Identifiers (NMIs) that are connected to your organisation's network.	a) Less than 500,000 b) Between 500,000 and less than 1,000,000 c) Between 1,000,000 and less than 2,000,000 d) More than 2,000,000 e) Unsure	60%
E-RET.2	What percentage of your organisation's Customer base is connected via Advanced Metering Infrastructure (AMI)?	This refers to the number of National Metering Identifiers (NMIs) with an Advanced Metering Infrastructure (AMI) connection between their premises and the Distribution Network Service Provider (DNSP), divided by the total number of NMIs connected to your organisation's network. AMI refers to systems that measure, collect, and analyse energy usage, from advanced devices such as 'smart' electricity meters, gas meters, and/or water meters, through various communication media on request or on a predefined schedule. *Source: Adapted from SGMM v1.1 Glossary*	a) Less than 25% b) Between 25% and less than 50% c) Between 50% and less than 75% d) More than 75% e) Unsure	15%

ID	Question	Context and Guidance	Response Options	Weight
E-RET.3	How many Critical and Commercial Customers does your organisation serve?	Of the total number of Customers that your organisation supplies electricity to (from RET.1), how many of these are considered Critical and Commercial? *Note:* • *Please refer to the glossary for further information regarding Critical and Commercial Customers*	a) Less than 500 b) Between 500 and less than 1,000 c) Between 1,000 and less than 2,500 d) Greater than 2,500 e) Unsure	10%
E-RET.4	Does your organisation operate Virtual Power Plants (VPP)?	A Virtual Power Plant (VPP) refers to an aggregation of resources, coordinated using software and communications technology, to deliver services that have traditionally been performed by a conventional power plant. In Australia, grid-connected VPPs are focused on coordinating rooftop PV and battery storage. *Source: AEMO, "Virtual Power Plan (VPP) Demonstrations", Published 23 November 2018*	a) Yes b) No	2.5%
E-RET.5	Is your organisation registered as a Retailer of Last Resort (RoLR)?	Under the Retail Law, the Australian Energy Regulator (AER) is responsible for overseeing the national Retailer of Last Resort (RoLR) scheme. The scheme is principally designed to ensure that in the event of retailer failure, arrangements are in place to ensure that customers continue to receive electricity and/or gas supply. *Source: AER, "Retailer of Last Resort plan - July 2015", Published 31 July 2015*	a) Yes b) No	2.5%
E-RET.6	Is your organisation the sole Retailer for any region?	For the purpose of this question, a region is synonymous with an Australian State or Territory.	a) Yes b) No	10%

ID	Question	Context and Guidance	Response Options	Weight
E-RET.7	In which region (or regions) does your organisation provide this service?	This information is used for reporting purposes only and does not influence your organisation's criticality. Select all regions that apply.	a) Australian Capital Territory (ACT) b) New South Wales (NSW) c) Queensland (QLD) d) South Australia (SA) e) Tasmania (TAS) f) Victoria (VIC) g) Western Australia (WA) h) Northern Territory (NT)	0%

7. Market Operations (E-OPS)

ID	Question	Context and Guidance	Response Options	Weight
E-OPS.0	**Is your organisation a Market Operator?**	**The Australian Energy Market Operator (AEMO) is responsible for operating Australia's largest electricity markets and power systems, including the National Electricity Market (NEM) and the Wholesale Electricity Market (WEM).** **Outside of the NEM and the WEM, there are other Market Operators (e.g., in Western Australia [WA] and the Northern Territory [NT])**	**a) Yes** **b) No**	**100%**
E-OPS.1	In which region (or regions) does your organisation provide this service?	This information is used for reporting purposes only and does not influence your organisation's criticality. Select all regions that apply.	a) Australian Capital Territory (ACT) b) New South Wales (NSW) c) Queensland (QLD) d) South Australia (SA) e) Tasmania (TAS) f) Victoria (VIC) g) Western Australia (WA) h) Northern Territory (NT)	0%