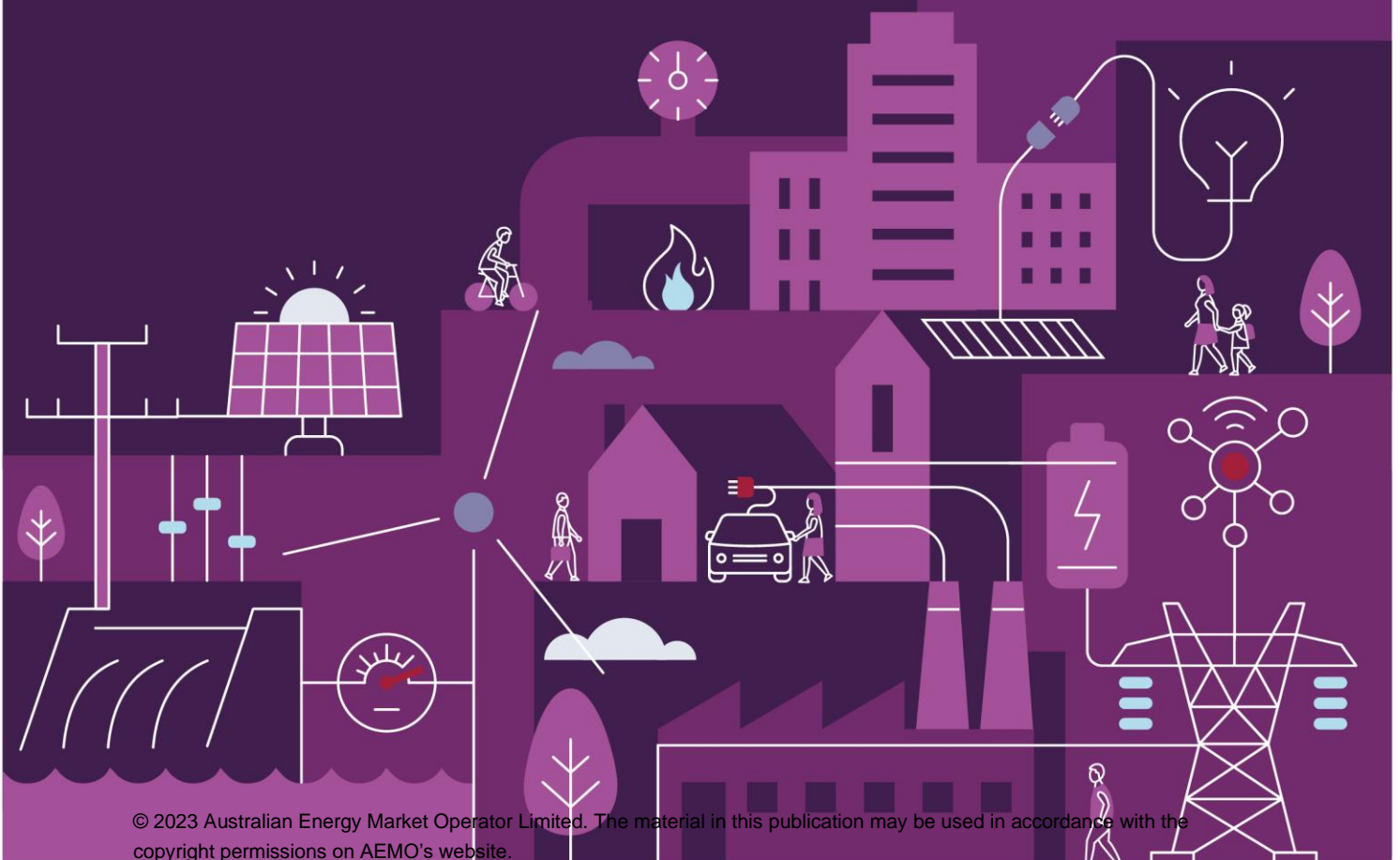# Australian Energy Sector Cyber Security Framework (AESCSF)

Gas Criticality Assessment Tool (G-CAT)

2023 AESCSF Program

![Australian Energy Sector Cyber Security Framework - AEMO]

Important Notice

Purpose

This document is made available by The Australian Energy Market Operator (AEMO) to provide information about the 2023 Australian Energy Sector Cyber Security Framework (AESCSF) Program.

This document accompanies other general guidance materials made available to Australian energy organisations 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 on the AEMO website.

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1. Overview

The Gas Criticality Assessment Tool (G-CAT) has been designed to assess the relative criticality of entities participating in the Australian gas sub-sector. This includes, but is not limited to, the gas markets operated by the Australian Energy Market Operator (AEMO) (including the Declared Wholesale Gas Market [DWGM], amongst others).
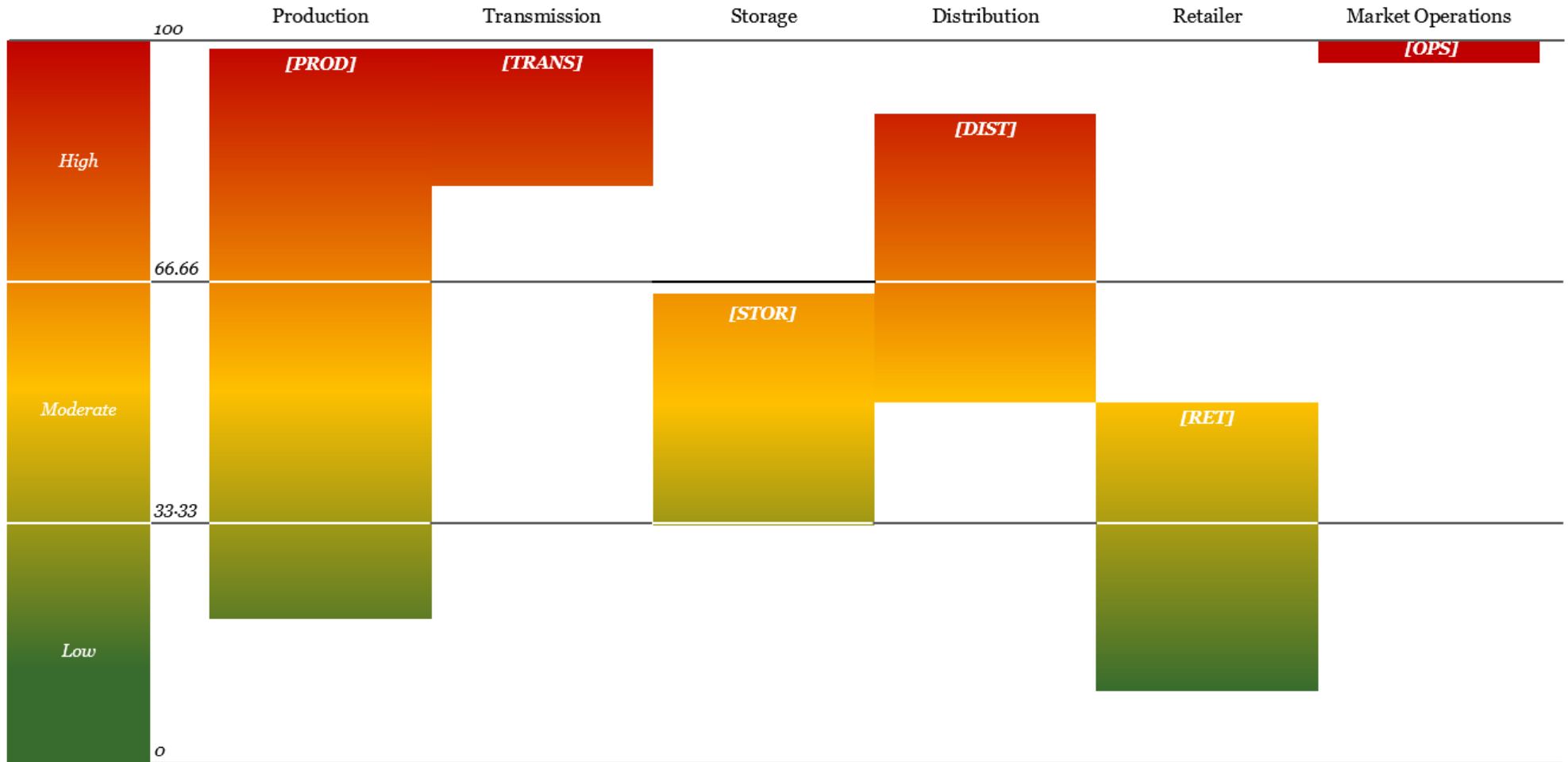
The primary objective of the tool is to place all participating entities on a single scale for the purpose of reporting, benchmarking, and determining the applicable target state maturity guidance from the Australian Cyber Security Centre (ACSC).

Based on consultation with AEMO, industry and government, each gas market role has been assigned a criticality band on the scale. Key criticality indicators for each gas 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.

The G-CAT was introduced in 2020-21 to complement the expansion of the Australian Energy Sector Cyber Security Framework (AESCSF) Program. There have been no significant updates to the G-CAT in the 2023 Program.

1.1. Criticality Bands by Market Role

2. Production (G-PROD)

ID	Question	Context and Guidance	Response Options	Weight
G-PROD.0	**Is your organisation involved in the production of natural gas?**	**According to the Australia Energy Market Commission (AEMC), natural gas in Australia is currently extracted as either:** **- conventional gas; OR** **- unconventional gas (such as coal seam gas or shale gas)** **Gas producers sell wholesale gas to electricity generators, other large gas users and energy retailers, who sell it to businesses and household customers.**	a) Yes b) No	**100%**
G-PROD.1	What is the total quantity of natural gas (in petajoules [PJ]) that your organisation produced for domestic use in the last financial year?	This refers to the sum of natural gas produced during the most recent financial year (1 July to 30 June) for domestic use. Do not include data for the current incomplete financial year. Criticality from the AESCSF perspective is primarily focused on natural gas produced for domestic use, so please exclude any production that was exported.	a) Less than 5 PJ b) Between 5 and less than 15 PJ c) Between 15 and less than 50 PJ d) Between 50 and less than 200 PJ e) More than 200 PJ f) Unsure	80%
G-PROD.2	Is your organisation involved in the liquefaction of natural gas (i.e., does your organisation produce Liquified Natural Gas [LNG]) for domestic use?	This refers to liquefied natural gas (LNG) which is natural gas that has been cooled down to liquid form for ease and safety of non-pressurised storage or transport. The majority of LNG production in Australia is used for export to foreign countries and entities. The focus of this question relates to the production of LNG for domestic use, which is typically held in storage for emergency supply or Gas-Powered Generation (GPG).	a) Yes b) No	5%

ID	Question	Context and Guidance	Response Options	Weight
G-PROD.2.1	How many petajoules of Liquified Natural Gas (LNG) did your organisation produce for domestic use in the last financial year?	The relevant period for this calculation is the most recent financial year (1 July to 30 June). Do not include data for the current incomplete financial year. The calculation for this amount is as follows: - The sum of dispatch for each day, totalled by days in a year (for example, 2 petajoules per day for 365 days = 730 petajoules.	a) Less than 20 PJ b) Between 20 and less than 40 PJ c) Between 40 and less than 60 PJ d) Between 60 and less than 80 PJ e) More than 80 PJ f) Unsure	15%
G-PROD.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%

3. Transmission Network Service Provider (G-TNSP)

ID	Question	Context and Guidance	Response Options	Weight
G-TNSP.0	**Is your organisation involved in the transmission of natural gas?**	**The gas produced for domestic consumption is transported by high transmission pipelines from the production facility to the entry point of the distribution network (known as the city gate) or to large users that are connected to the transmission pipeline.** **Transmission pipelines use very high-pressure pipelines, compressor stations, storage facilities and other elements to transport gas.**	a) Yes b) No	**100%**
G-TNSP.1	What is the combined capacity (throughput) of your organisation's transmission pipelines (TJ/d)?	The relevant period for this calculation is the most recent financial year (1 July to 30 June). Do not include data for the current incomplete financial year. The calculated capacity includes both full regulation pipelines and light regulation pipelines. Capacity should be based on pipeline capacity for primary gas flow direction only. Do not include or add reverse flow capacity for bi-directional pipelines.	a) Less than 100 TJ/d b) Between 100 and less than 300 TJ/d c) Between 300 and less than 500 TJ/d d) Between 500 and less than 1,000 TJ/d e) More than 1,000 TJ/d f) Unsure	50%
G-TNSP.2	How many Commercial Customers does your organisation transmit natural gas to?	Of the total number of Customers that your organisation supplies gas to, how many of these are considered Commercial? *Note:* • *Please refer to the glossary for further information regarding Commercial Customers.*	a) Less than 1,000 b) Between 1,000 and less than 2,500 c) Between 2,500 and less than 5,000 d) More than 5,000 e) Unsure	2.5%

ID	Question	Context and Guidance	Response Options	Weight
G-TNSP.3	How many Critical Customers does your organisation transmit natural gas to?	Of the total number of Customers that your organisation supplies gas to, how many of these are considered Critical? *Note:* • *Please refer to the glossary for further information regarding Critical Customers.*	a) Less than 500 b) Between 500 and less than 1,000 c) Between 1,000 and less than 2,500 d) More than 2,500 e) Unsure	20%
G-TNSP.4	How many Gas-Powered Generation (GPG) entities (within Australia) does your organisation transmit natural gas to?	This refers to the number of GPGs that your organisation transmitted natural gas to in the most recent financial year (1 July to 30 June). Do not include data for the current incomplete financial year. Gas-Powered Generation entities use gas combustion to generate some or all of the electricity they produce. Gas-Powered Generation entities include gas turbine power stations, thermal gas power stations and reciprocating gas power stations.	a) Less than 2 b) 2 - 3 c) 4 - 6 d) 7 - 10 e) More than 10 f) Unsure	17.5%
G-TNSP.5	How much natural gas and/or Liquified Natural Gas (LNG) (in terajoules [TJ]) did your organisation transmit to Gas Powered Generation (GPG) entities in Australia in the last financial year?	This refers to the sum of natural gas (in terajoules [TJ]) transmitted to GPGs in the most recent financial year (1 July to 30 June). Do not include data for the current incomplete financial year.	a) Less than 2,500 TJ b) Between 2,500 and less than 5,000 TJ c) Between 5,000 and less than 10,000 TJ d) Between 10,000 and less than 15,000 TJ e) More than 15,000 TJ f) Unsure	5%

ID	Question	Context and Guidance	Response Options	Weight
G-TNSP.6	Does your organisation transmit natural gas to any Gas-Powered Generation (GPG) entities in South Australia?	Gas powered generation accounts for approximately 40% of South Australia's electricity production. As such, there is a higher level of dependence on gas for electricity generation compared to other regions.	a) Yes b) No	2.5%
G-TNSP.7	What is the combined daily average quantity of natural gas (in terajoules [TJ]) held in reserve (i.e., held in transmission pipelines through "linepack") over the last financial year	Linepack refers to the volume of gas that be stored in the gas pipeline. It is a form of gas storage that is important for maintaining and meeting gas demand. The calculation for linepack is a function of pipeline volume (i.e., diameter and length) and pressure (i.e., gas compression).	a) Less than 50 TJ b) Between 50 and less than 100 TJ c) Between 100 and less than 200 TJ d) Between 200 and less than 300 TJ e) More than 300 TJ f) Unsure	2.5%
G-TNSP.8	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. Storage (G-STOR)

ID	Question	Context and Guidance	Response Options	Weight
G-STOR.0	**Does your organisation operate any bulk storage of natural gas or Liquified Natural Gas (LNG) for domestic use?**	**This refers to storage facilities that conserve surplus natural gas production allowing for quick delivery as needed.** **Gas is held in storage facilities which include any element in the gas network that has the capability of storing gas. This can be held in the transmission pipeline themselves through linepack, or through dedicated storage tanks and underground storage facilities.** **Gas storage facilities can inject gas into the transmission system at short notice to manage peak demand or meet emergency needs.**	**a) Yes** **b) No**	**100%**
G-STOR.1	What is the maximum withdrawal capacity of your organisation's storage facilities?	This refers to the maximum amount of gas can be withdrawn from the storage facility in a given day. The maximum withdrawal capacity is typically dependant on the pressure levels inside the storage with the higher the pressure, the greater the withdrawal capacity.	a) Less than 50 TJ/d b) Between 50 and less than 100 TJ/d c) Between 100 and less than 200 TJ/d d) Between 200 and less than 400 TJ/d e) More than 400 TJ/d f) Unsure	75%

ID	Question	Context and Guidance	Response Options	Weight
G-STOR.2	What is maximum storage capacity of your organisation's storage facilities?	This refers to the maximum amount of gas that can be held within the storage facility.	a) Less than 2 PJ b) Between 2 and less than 10 PJ c) Between 10 and less than 30 PJ d) Between 30 and less than 50 PJ e) More than 50 PJ f) Unsure	25%
G-STOR.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 (G-DNSP)

ID	Question	Context and Guidance	Response Options	Weight
G-DNSP.0	**Is your organisation involved in the distribution of natural gas?**	**Gas distribution refers to the transport of gas via gas distribution pipelines from transmission pipelines to end users.** **They typically consist of a backbone of high and medium pressure pipelines running between the 'city gate' (the point of connection to the transmission pipeline) and major demand centres. This pipeline system feeds low pressure pipelines, which deliver the gas to businesses and homes.**	**a) Yes** **b) No**	**100%**
G-DNSP.1	How much natural gas (in terajoules [TJ]) did your organisation transport through your organisation's distribution pipelines in the last financial year?	This refers to the sum of natural gas (in terajoules [TJ]) transported through all gas distribution network pipelines within the most recent financial year (1 July to 30 June). Do not include data for the current incomplete financial year.	a) Less than 10,000 TJ b) Between 10,000 and less than 20,000 TJ c) Between 20,000 and less than 30,000 TJ d) Between 30,000 and less than 40,000 TJ e) More than 40,000 TJ f) Unsure	35%
G-DNSP.2	How many Customers (number of connected and active National Metering Identifiers [NMIs] or Metering Installation Reference Numbers [MIRNs]) does your organisation supply natural gas to?	This refers to the number of customers that your organisation supplies gas to, based on the number of National Metering Identifiers (NMIs) or Metering Installation Reference Numbers (MIRNs) that are connected to your organisation's network. Natural gas distribution pipelines supply gas to approximately 4.3 million households and 130,000 commercial and industry customers.	a) Less than 200,000 b) Between 200,000 and less than 500,000 c) Between 500,000 and less than 700,000 d) Between 700,000 and less than 1M e) More than 1M f) Unsure	35%

ID	Question	Context and Guidance	Response Options	Weight
G-DNSP.3	Is your organisation involved in the operation of any city gate facilities?	City gate facilities are the point where transmission pipelines from the production facility meet the entry point of the distribution network. City gate facilities receive high-pressure gas via the transmission pipelines and perform a step-down pressure conversion to enable gas to travel via medium-to-low pressure distribution pipelines into businesses, homes, and major demand centres.	a) Yes b) No	15%
G-DNSP.4	How many Critical and Commercial Customers does your organisation distribute natural gas to?	Of the total number of Customers that your organisation supplies gas to, 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 1,000 b) Between 1,000 and less than 2,500 c) Between 2,500 and less than 5,000 d) More than 5,000 e) Unsure	15%
G-DNSP.5	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 (G-RET)

ID	Question	Context and Guidance	Response Options	Weight
G-RET.0	**Is your organisation involved in the retail of natural gas?**	**A gas retailer purchases gas from wholesale markets and sells the gas to customers. These customers may be Critical or Commercial customers.** ***Note:*** • ***Please refer to the glossary for further information regarding Critical and Commercial Customers.***	a) Yes b) No	100%
G-RET.1	How many Customers (number of connected and active National Metering Identifiers [NMIs] or Metering Installation Reference Numbers [MIRNs]) does your organisation provide retailing of natural gas to?	This refers to the number of Customers that your organisation supplies gas to, based on the number of National Metering Identifiers (NMIs) that are connected to your organisation's network.	a) Less than 200,000 b) Between 200,000 and less than 500,000 c) Between 500,000 and less than 700,000 d) Between 700,000 and less than 1M e) More than 1M f) Unsure	80%
G-RET.2	How many Critical and Commercial Customers does your organisation provide retailing of natural gas to?	Of the total number of Customers that your organisation supplies gas to, 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) More than 2,500 e) Unsure	20%

ID	Question	Context and Guidance	Response Options	Weight
G-RET.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%

7. Market Operations (G-OPS)

ID	Question	Context and Guidance	Response Options	Weight
G-OPS.0	**Is your organisation a Market Operator?**	**The Australian Energy Market Operator (AEMO) is responsible for operating a number of wholesale gas markets, including the Declared Wholesale Gas Market (DWGM) and other markets supporting the secondary trading of gas and pipeline capacity. In addition, AEMO operates Australia's gas retail markets and bulletin boards that provide up-to-date gas market and system information.** *Note:* • *Please do not select this response just because your organisation operates a transmission pipeline. To be considered the market operator your organisation must be administering the bidding and / or settlement processes for a gas market.*	a) Yes b) No	100%
G-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%