PROPOSED PROCEDURE CHANGE (PPC)

Issue Number	IN004/20		
Impacted Jurisdiction(s)	NSW/ACT		
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Affected Gas Market(s)	• Retail	**Date proposal sent to AEMO**	Thursday, 19 November 2020
Short Issue Title	Retail Market Procedures (RMP) amendments to improve Base Load (BL) and Temperature Sensitivity (TSF) calculations and gas meter estimation methodology.		
Other key contact information	grcf@aemo.com.au		

VERSION #	PRESENTED TO	DATE
1.0	GRCF	24 May 2021

PROPOSED PROCEDURE CHANGE (PPC) – DETAILED REPORT SECTION

1. DESCRIPTION OF ISSUE

Jemena Gas Networks (JGN) is proposing a change to the Retail Market Procedures (NSW/ACT) to support improvement of the Type 2 (connected less than 12 months) gas meter estimation and substitution methodology. The proposed changes create additional characterisations and an installation-specific methodology for two meter types: Volume Boundary (VB) and Volume Boundary Hybrid (VBH) meters that will improve first-time billing accuracy and customer outcomes.

Currently the Base Load and Temperature Sensitivity (BL TSF) calculations define an estimation and substitution methodology for gas meters. There are three types:

- Type 1 – 12 months reading history present – reading data is used to determine meter identification registration number (MIRN)-specific base load (BL) and temperature sensitivity factor (TSF) standing data values which have billing period and Effective Degree Days applied when consumption and meter readings are estimated.
- Type 2 – less than 12 months reading history present – characterisation averages are used, calculated from whole-of-Type 1 population characterisation averages.
- Type 3 – agreed method between network operator and retailer (in practice, for publishing of readings within Retail Market Procedure (RMP) time-frames, the network operator will apply an alternate method using e.g. reading history and the retailer will perform its own validation, accept and use for billing, or raise a query or dispute).

Type 2 has six (6) characterisations or market segments:

MR	Metro Residential	Residential class within Short Term Trading Market
MB	Metro Business	Business class within Short Term Trading Market
NR	Non-Metro Residential	Residential class in regional NSW
NB	Non-Metro Business	Business class in regional NSW
AR	ACT Residential	Residential class in Canberra/ACT
AB	ACT Business	Business class in Canberra/ACT

Analysis of meter reading and estimation data by JGN shows that the current methodologies do not cater for VB and VBH meters, because these meters exhibit energy intensities and MIRN-to-MIRN variability not consistent with the six current characterisations.

1.1. Proposed changes

1.1.1. Volume Boundary (VB) and Volume Boundary Hybrid (VBH) meters

This installation type, introduced by JGN in 2015 for the medium-density / high-rise market, offers an alternative for premises with centralised hot water systems and individual-unit sub-metering / individual metering for cooktops. Embedded network operators or strata operators are typically the customers for VB meters who on-sell hot water or energy to individual customers outside of the retail gas market. Appendices B and C shows a diagram of VB installation types – Pure (substantially Hot Water) and Hybrid (cooktops supplied through the VB meter with a combination of traditional centralised hot water set-up).

The current size of this market segment is 750 installations, with projected growth of 150 per year. These installations represent roughly 70,000 dwellings.

VB meters have wide variation in energy flow through the meter due to the variation in number of dwellings and appliance type behind the meter. For dwellings, the range is from 10 gigajoules (GJ) per annum to almost 1000 GJ per annum with the average around 100 GJ per annum. For appliances, per-dwelling cooking load is around 1-2 GJ per annum and for hot water is around 12-15 GJ per annum – approximately a seven-fold variation in energy-intensity. The energy recorded by VB meters is therefore neither representative of a single residential dwelling nor of a business and is therefore not well captured by any existing Type 2 characterisations. Appendix D illustrates the high level of variance between individual VB-metered MIRNs.

The consequence of the current RMP arrangements is that applying the NSW/ACT Retail Market Procedures (RMP) methodology leads to inaccurate estimates and systemic underestimation of energy consumption for VB meters. Actual readings can also be unnecessarily invalidated as SAP is expecting a lower reading. This leads to less accurate customer bills, potential revenue loss, bill shocks (when actual readings are obtained), and retailer and customer dissatisfaction with the VB product.

A further impact is that the presence of VB meter energy within the residential (or business) characterisations skews higher the characterisation average calculation. JGN notes that retailers are sometimes incorrectly classifying VB meter installations as business even though they are substantively residential in order to try and avoid inaccurate substituted / estimated reads under the existing Type 2 characterisations.

Consideration has been given to using Type 3 methodology or creating a VB characterisation average, but these options do not address the large variances in energy across the VB meter portfolio, nor improve the accuracy of characterisation averages.

Therefore, JGN proposes an additional Type 2 estimation methodology for VB meters linked to number of dwellings, appliance type and occupancy factor (allowing for an average of less than 100% occupancy of medium density / high-rise premises during the first year after meter activation).

JGN further proposes that VB MIRNs and meter energy be excluded from the calculations of the relevant residential- or business-characterisation average.

1.1.2. Gas meters attached to the same MIRN as hot water meter – medium density / high rise

A gas meter behind a MIRN that has a separate hot water meter will typically record cooktop / oven appliances and possibly bayonet fittings gas usage. JGN data analysis of this 250,000-meter cohort shows annual energy in the range of 1–3 GJ per annum, which is a fraction of average consumption for residential customers without separate gas and hot-water meters for the same MIRN (around 1/10 the average consumption for residential customers without separate gas and hot-water meters for the same MIRN in NSW and 1/25 in ACT). Residential characterisation average is representative of customers with a variety of multiple appliances, including cooking, hot water, and space heating.

Typically, 10,000 to 20,000 new meters of this type are connected each year. This will continue into the foreseeable future as the Australian Energy Regulator (AER) has decided that Centralised Hot Water with individual market-contestable sub-meters must remain an available option alongside VB meters.

Systemic overestimation of the gas meter consumption occurs where the meter reading is skipped during the first year after meter activation. Actual readings can also be unnecessarily invalidated as JGN's systems are expecting a higher consumption and reading. JGN has put in place business processes to validate and accept lower than expected actual readings.

The presence of gas meters behind MIRNs that have a separate hot water meter skews the residential characterisation average lower. JGN therefore proposes to create additional residential characterisations for MIRNs with attached gas and hot water meters to calculate Type 2 estimated consumptions and readings.

JGN also proposes to exclude the MIRNs and energy of gas meters associated with hot water meters from the residential characterisations and include in additional residential characterisations.

Proposed characterisations are outlined in Appendix F.

1.1.3. Type 1 estimations

The primary focus of this initiative is improvement of Type 2 gas meter estimations. JGN also seeks to make a minor change to the Type 1 BL (1 October to 31 March) and TSF (1 April to 30 September) reading periods defined in the RMP to improve the quality of BL and TSF standing data calculations.

This is for MIRNs with at least 12 months' consumption history where the quarterly reading dates fall on dates outside the specified periods (due to scheduled dates or route changes) that a MIRN-specific BL and TSF value cannot be calculated. A seven-day tolerance around the RMP-defined period dates would result in approximately 1,000 to 5,000 MIRNs each BL TSF twice-yearly calculation cycle being allocated MIRN-specific instead of characterisation-average BL and TSF values.

JGN proposes to seek discretion for BL calculations to use readings with a seven-day tolerance (i.e., 23 September to 7 April for TSF and 24 March to 7 October for affected quarterly-read MIRNs), which would otherwise revert to characterisation average values.

1.2. Pre-consultation outcomes

JGN Gas Networks submitted a Gas Market Issue (GMI) paper to the Gas Retail Consultative Forum (GRCF) regarding proposal IN004/20 at the March 2021 GRCF meeting[1]. This followed the submission of an earlier draft of the proposal to the GRCF in late 2020.

All participants were asked whether the change represented a net benefit to their organisation, whether the change had any system impacts, and whether any further documentation changes were needed to address the requirements of the proposal. Responses were received from AGL, Origin Energy, and Red and Lumo Energy. All three responses affirmed that the change represented a net benefit to their organisation and that the change would not cause significant system impacts. The responses proposed a number of clarificatory amendments to JGN's proposed RMP changes, which have been incorporated into the proposed drafting in Attachment A.

1.3. Invitation to provide feedback.

Anyone wishing to make a submission for this first stage consultation stage are requested to use the response template provided in Attachment G. Submissions close 21 June 2021 and should be e-mailed to grcf@aemo.com.au.

2. REFERENCE DOCUMENTATION

- Retail Market Procedures (NSW and ACT) v26.0
- Attachment A to F

3. OVERVIEW OF CHANGES

The key changes are:

(1) Calculation methodology for estimation of VB meter consumption using number of dwellings, appliance type and occupancy factor.

[1] Please see meeting minutes and papers for that meeting on the GRCF web page here: https://aemo.com.au/en/consultations/industry-forums-and-working-groups/list-of-industry-forums-and-working-groups/gas-retail-consultative-forum

(2) Exclusion of VB meter consumption and MIRNs from existing relevant Residential characterisations.

(3) New, separate residential characterisations for gas meters attached to same MIRN as hot water meters (Medium Density / High Rise segment).

(4) Exclusion of new characterisation energy consumption and MIRNs from existing relevant Residential characterisations.

(5) Introduction of seven-day allowable periods outside of current defined BL and TSF reading periods.

The proposed changes are set out in Attachment A.

JGN has provided advice to AEMO that they will implement these changes in Q4 2022, therefore if these changes are approved, AEMO will issue a Notice of Effective Date issued by June 2022.

4. LIKELY IMPLEMENTATION REQUIREMENTS AND EFFECTS

The proposed change is not anticipated to require retailer or AEMO process or IT system change impacts. IT changes are anticipated to be limited to JGN. Neither AEMO nor any retailer disputed this assessment during pre-consultation.

Currently, JGN is deploying amelioration measures by actively pursuing actual readings, applying appropriate BL, TSF to new VB meters and validating readings for new gas meters attached to hot water meters (i.e. is exceeding the existing granularity of the Type 2 characterisation in the RMP) and is planning to make IT system changes to substantively automate these processes.

5. IMPACT OF ISSUE NOT PROCEEDING

If this proposed change is not accepted, RMP customer characterisations will not be upgraded to achieve granularity consistent with the meter installation types unique to JGN and Evoenergy, and actual readings will be needlessly invalidated and estimated readings will be inaccurate for retailers, embedded network operators and customers in the medium density high rise segment.

6. OVERALL COSTS, BENEFITS, AND MAGNITUDE OF THE CHANGES

From an overall benefits perspective, the proposed changes will result in fewer billing adjustments to both Network Operator and Retailer, lower risk of revenue loss, more satisfied customers, as well as cost reductions from reduced complaints and investigations.

The specific benefits are:

- More accurate network and end-user billing for: VB and VBH meters, gas meters associated with a hot water meter for the same MIRN, and quarterly read customers whose reading periods fall outside the defined summer and winter periods.
- More actual readings and better-quality estimates will improve overall customer satisfaction for retailers, embedders and end-use customers in the medium density / high rise segment and enhance trust and confidence in the VB meter product.

These factors will improve overall customer satisfaction principally by reducing the number of dissatisfied customers. In turn this will reduce the costs incurred by Retailers and Network Operators in cancel-rebilling effort and in resolving customer metering and billing issues.

In terms of costs, Jemena has provided advice that their overall system changes (IT and business process) are expected to be reasonably substantive. However, Jemena believes that the benefits (tangible and intangible) will be realised over a longer-term horizon (factoring in anticipated growth of the VB meter and VBH meter market segments) and will surpass the original establishment costs.

7. CONSISTENCY WITH NATIONAL GAS RULES (NGR) AND NATIONAL GAS OBJECTIVE (NGO)

Regarding the changes in east-coast jurisdictions, AEMO's preliminary assessment of the proposal's consistency with the NGR and NGO is:

Consistency with National Gas Law (NGL) and NGR	AEMO's view is that the proposed change is consistent with the NGL and NGR. AEMO also believes that this change is consistent with the National Energy Retail Rules (NERR), the Victorian Energy Retail Code, and the Victorian Gas Distribution System Code. No participant raised any objections during the consultations listed in Section Error! Reference source not found., and participants will be given an opportunity during this PPC consultation to inform AEMO if they believe there is such an inconsistency.
National Gas Objective	As outlined in Section 6, AEMO's view is that the propose change will help achieve the National Gas Objective through two mechanisms: 1. Improving the efficiency of the operation of the gas market via more accurate bills. 2. Improving price and quality outcomes for consumers by minimising the frustration from estimated or inaccurately estimated bills.
Any applicable access arrangements	AEMO's view is that the proposed change is not in conflict with existing Access Arrangements. Participants will be given an opportunity during this PPC consultation to inform AEMO if they believe the proposed change is in conflict with existing Access Arrangements.

8. SUPPORTING DOCUMENTATION

Attachment A Proposed RMP changes

Attachment B Volume Boundary Meter – "Hybrid" Installation Schematic

Attachment C Volume Boundary Meter – "Pure" Installation Schematic

Attachment D Volume Boundary Meter – Energy by Dwellings and Appliance Type

Attachment E Indicative per dwelling BL, TSF and occupancy factors

Attachment F Customer Characterisations – Current and Proposed State

Attachment G PPC response template

9. PROPOSED TIMELINES

- Issue PPC on 24 May 2021.
- PPC consultation closes on 21 June 2021.
- Issue IIR on 19 July 2021.
- IIR consultation closes on 16 August 2021.
- Notice of AEMO Decision issued in mid-September 2021.
- Notice of Effective Date issued by June 2022.
- Effective date in Q4 2022.

ATTACHMENT A – DOCUMENTATION CHANGES

Changes are shown against v26.0 of the RMP (NSW/ACT). Only clauses to which changes have been proposed are reproduced below.

1.2 Definitions and Interpretation

1.2.1 Definitions

The words and phrases set out below have the meanings set out opposite them when used in these Procedures. Defined terms are intended to be identified in these Procedures by italicising them, but failure to italicise a defined term does not affect its meaning unless otherwise indicated.

actual meter reading	The figures or other information shown on a *meter* or instrument as actually *read*.
address based identifiers	In relation to the address standard specified in the *Gas Interface Protocol*, the attributes that make up the *address based identifiers* are street type, street suffix, flat or unit type, floor or level type and postal delivery type.
adjustment amount	For a *User* in a *network section* for a *gas day*, the amount calculated under clause Error! Reference source not found..
AEMO	Has the meaning given in the *Law*.
AER	Has the meaning given in the *Law*.
affected FRO	In relation to a *transfer error correction request* and a *delivery point*, the *User* who would cease to be registered as the *FRO*, or whose period of registration would be changed, if the *User* who delivered the *transfer error correction request* were registered as the *FRO* for that *delivery point* with effect from the *error correction transfer date*.
aggregate MDQ	For a *User* for a *network section*, the amount calculated by summing the current "MDQ" (as defined in the *applicable access arrangement* for the relevant *network section*) for each *delivery point* in the *network section* for which the *User* is the *FRO*.
allowable period	In relation to a *transfer request* lodged without a *Customer no-change statement*, the period commencing on the 10th *business day* prior to the *proposed transfer date* and expiring on the 10th *business day* after the *proposed transfer date*. In relation to a *transfer request* lodged with a *Customer no-change statement*, the period commencing on the 4th *business day* prior to the *proposed transfer date* and expiring on the 10th *business day* after the *proposed transfer date*.

alternative transfer date notice	In relation to a *transfer request*, a notice delivered to *AEMO* pursuant to clause Error! Reference source not found..
applicable access arrangement	Has the meaning given in the *Law*.
apportionment factor	The factor for a *non-daily metered delivery point* calculated under: (a) in the case of a *network section* other than an *STTM network section*, clause Error! Reference source not found.; and (b) in the case of an *STTM network section*, clause Error! Reference source not found..
apportionment percentage	The percentage calculated under: (a) in the case of a *network section* other than an *STTM network section*, clause Error! Reference source not found.; and (b) in the case of an *STTM network section*, clause Error! Reference source not found. or Error! Reference source not found., as applicable.
approved estimation methodology	An applicable estimation methodology contained in Attachment 2.
approved substitution methodology	An applicable substitution methodology contained in Attachment 3.
approved validation methodology	An applicable validation methodology contained in Attachment 1.
available offsetting amount	Has the meaning given in clause Error! Reference source not found..
average heating value	In relation to a *reading period*, has the meaning given in clause Error! Reference source not found..
balanced network section	A *no OBA network section* or an *OBA network section*.
balancing arrangements register	The register maintained by *AEMO* under clause Error! Reference source not found..
base load	In relation to a *delivery point*, the level of *gas* consumption at that *delivery point* that is not affected by the weather.
base reading	In relation to a *validated meter reading* (*reference reading*), the immediately preceding *validated meter reading* (see clause Error! Reference source not found.).
basic meter	A *gas meter* without a *data logger* or a *hot water meter* that is not *read* daily.

business day	A day, other than a Saturday, a Sunday or a public holiday in the State of New South Wales.
checksum	In relation to a *MIRN*, a single digit used to validate the correct entry of a *MIRN* in a database entry field.
common factor	In relation to a *hot water meter*, the factor applied to litres of hot water consumed at a *delivery point* to obtain the *consumed energy* as measured at that *delivery point* during the *reading period* as follows: *Common factor* = Energy used divided by Litres used Where: Energy used = *MJ* consumed in the *reading period* by master *gas meter* for hot water service at the *delivery point*, determined in accordance with clause Error! Reference source not found.. Litres used = Total hot water used at the *delivery point*.
complete customer listing	A listing created and administered by a *Retailer* that comprises the data attributes as required in the *Gas Interface Protocol* for every *MIRN* for which the *Retailer* is registered as the current *FRO* in AEMO's *metering database*.
complete MIRN listing	A listing created and administered by a *Network Operator* that comprises the *MIRN, discovery address* and *meter number* of every *MIRN* that is recorded in the *metering database* of that *Network Operator*. This is referred to in the *Rules* as the '*DPI full listing*'.
confirmed nomination	The quantity of *gas* assigned to a *shipper* under clause Error! Reference source not found.or Error! Reference source not found., or the quantity of *gas* advised by a *User* to the *Network Operator* under clause Error! Reference source not found..
consumed energy	In relation to a period, the *flow* during that period converted to energy by application of the applicable *average heating value* and the *pressure correction factor* or *common factor* (see clauses Error! Reference source not found. to Error! Reference source not found., as applicable).
correction amount	The amount calculated by *AEMO* under clause Error! Reference source not found. using the methodology developed under clause Error! Reference source not found..
correction period	The period determined by *AEMO* to which any calculation carried out under clause Error! Reference source not found. or Error! Reference source not found. applies.

cumulative imbalance	The imbalance calculated under clause Error! Reference source not found. and expressed as a positive or negative value (unless it equals zero).
Customer	The 'customer' as defined in section 5 of the *NERL* in relation to *gas* delivered at a *delivery point* for particular premises.
Customer characterisation	In relation to a *Customer* at a *delivery point*, whether the *Customer* is: 'metropolitan' or 'non-metropolitan', where metropolitan indicates the *delivery point* is on the NSW-Wilton or ACT-Canberra *network section*; and 'residential' or 'business', where residential indicates the primary use of the *consumed energy* is for household purposes and business indicates the primary use of the *consumed energy* is for commercial purposes, as determined by the *Customer's Retailer*.
Customer no-change statement	A statement given with a *transfer request* in accordance with clause Error! Reference source not found..
Customer-own read	A *read* of a *meter* undertaken by a *Customer*, details of which are provided by the *Customer* to the *User* or *Network Operator* for the *delivery point* to which the *meter* relates. A *Customer-own read* is taken to be an *estimated meter reading*.
daily metered	In relation to a *delivery point*, the recording and reading of *gas* or water consumption on a daily basis.
data logger	A device that collects and stores data relating to the volume and, where available, the temperature and pressure of *gas* or water, and is capable of either: (a) transferring recorded data to a portable reading device; or (b) being accessed remotely by the *Network Operator* through an electronic data collection system.
data provision period	The period commencing on the first business day of the *allowable period* and expiring at midnight on the first *business day* after the day on which the *allowable period* expires.
de-energised or *disconnected*	Have the meanings given in Part 1 of the *NERL*.
default RoLR	Has the meaning given in Part 6 of the *NERL* (retailer of last resort scheme).
delivery point	A point on a *Network Operator's network* at which *gas* is withdrawn from the *network* and delivered to the *Customer* for particular premises.

delivery point identifier (DPI)	See definition of *MIRN*.
Deregistered	In relation to a *MIRN*, means that the *delivery point* has been permanently removed and the *MIRN* removed from operational use in the *Network Operator's metering database*.
designated RoLR	Has the meaning given in Part 6 of the *NERL*.
Disconnected	See definition of *de-energised*.
discovery address	In relation to a *delivery point*, the address of the premises to which *gas* is supplied at that *delivery point*, at a minimum including street number (or the equivalent), street name, street identifier, and suburb/city/town. The *discovery address* may also include other specified site address information that conforms with the address standard specified in the *Gas Interface Protocol*.
distributed withdrawal	A quantity of *gas* determined to have been withdrawn at a *non-daily metered delivery point*, calculated under: (a) for a *network section* other than an *STTM network section*, clause Error! Reference source not found. or Error! Reference source not found.; and (b) for an *STTM network section*, clause Error! Reference source not found. or Error! Reference source not found., as revised or recalculated in accordance with clause Error! Reference source not found. or Error! Reference source not found. (as applicable).
distribution tariff	Has the meaning given in a *Network Operator's applicable access arrangement*.
DPI full listing	Is defined for the purposes of the *Rules* and has the same meaning as *complete MIRN listing*.
error correction date	The day nominated in a *transfer error correction request* as the day with effect from which the *User* who delivered the *transfer error correction request* to *AEMO* is to be registered in the *AEMO metering database* as the *FRO* for the *delivery point* to which the request relates.
error correction objection notice	A notice of objection to a *transfer error correction request*, delivered to *AEMO* under clause Error! Reference source not found..
error correction objection withdrawal notice	A notice of withdrawal of an objection to a *transfer error correction request*, delivered to *AEMO* under clause Error! Reference source not found..

error correction permitted period	In relation to a *transfer error correction request*, the period of 185 *business days* expiring on the last *business day* before the day on which the *transfer error correction request* is delivered to *AEMO*.
estimated meter reading	An estimate of an *actual meter reading* that is made under these Procedures in accordance with an *approved estimation methodology*, or a *Customer-own read*.
estimated withdrawal	An *estimated withdrawal* calculated under: (a) for a *network section* other than an *STTM network section*, clause Error! Reference source not found. or revised under clause Error! Reference source not found.; and (b) for an *STTM network section*, clause Error! Reference source not found. or recalculated under clause Error! Reference source not found..
explicit informed consent	Has the meaning given in Part 1 of the *NERL*.
failed retailer	Has the meaning given in Part 6 of the *NERL*.
FCLP amount	A forecast change in linepack amount, which is the amount calculated for a *User* by *AEMO* under clause Error! Reference source not found..
FCLP amount calculation methodology	Has the meaning given in clause Error! Reference source not found..
FCLP validity criteria	The criteria determined by *AEMO* under clause Error! Reference source not found. as the criteria that must be met in order for clauses Error! Reference source not found. and Error! Reference source not found. to remain in effect.
Flow	The difference between a *validated meter reading* and the immediately preceding *validated meter reading*.
forecast requirement	Either: (a) the sum of the information provided under clauses Error! Reference source not found. and Error! Reference source not found., or revised under clause Error! Reference source not found.; or (b) the sum of the information provided under clauses Error! Reference source not found., Error! Reference source not found. and Error! Reference source not found., or revised under clause Error! Reference source not found..

forecast withdrawal	For a *User*, the *User*'s *forecast requirement* less its *reconciliation adjustment amount* and, if relevant, its *participant imbalance amount*.
forecasting information	The information provided by *AEMO* under clause Error! Reference source not found..
FRC HUB	The information system provided by *AEMO* for the transmission of aseXML messages under these Procedures.
FRC HUB Operational Terms and Conditions	The terms and conditions under which *AEMO*, each *Retailer* and *Network Operator* seek connection to and are obliged to operate under when connecting to and issuing or receiving transactions on the *FRC HUB*.
FRO	(Financially Responsible Organisation) In relation to a *delivery point*, the person identified in *AEMO's metering database* as the *User* responsible, at the relevant time, for settling the account relating to that *delivery point*.
Gas	Has the meaning given to 'natural gas' in the *Law*.
gas day	A period of 24 consecutive hours starting at the same time as a *standard gas day* as defined in Part 26 of the *Rules*.
Gas Interface Protocol	The protocol that governs the manner and form in which information is to be provided, notice given, notices or documents delivered and requests made, as contemplated by these Procedures. (See also clause Error! Reference source not found..)
gas meter	A *meter* that measures the mass or volume of *gas* (see definition of *meter*).
Gas Supply Act	Gas Supply Act 1996 (NSW).
Gas Supply Regulation	*Gas Supply (Natural Gas Retail Competition) Regulation 2001* (NSW).
genuine transfer error	In relation to a *delivery point*, a requirement to return the *delivery point* to the previous *FRO*, arising because the current *FRO* initiated a *transfer request* and was registered as the *FRO* for the *delivery point* in error.
GJ	One gigajoule which equals 1×10^9 joules.
heating value (HV)	The amount of energy, measured in *MJ* per cubic metre at standard conditions (15ºC and 101.325 kPa), released when a cubic metre of *gas* is completely burned in a steady-flow process.

	HVs are measured based on the quality of the *gas* that is reticulated in a *network section* in each *gas day*. Each *delivery point* in the *network section* is assigned a HV based on the measurements of a designated *gas* chromatograph, or multiple *gas* chromatographs weighted in accordance with technical parameters. The HV assigned to a *delivery point* on any given day will vary in accordance with the mix of hydrocarbons in the *gas* in that *network section*.
hot water meter	A *meter* that measures the volume of water (see definition of *meter*).
industry approved methodology	A methodology *published* by *AEMO* that must be developed (and may only be amended) after consultation with an industry reference group established by *AEMO*, such as the Gas Retail Consultative Forum or a successor group or committee. This includes a methodology developed under clauses Error! Reference source not found., Error! Reference source not found., Error! Reference source not found. and Error! Reference source not found., but excludes the *approved validation methodology, approved estimation methodology* and *approved substitution methodology*.
interval meter	A *meter* with a *data logger* that is *read* daily.
Jemena	Jemena Gas Networks (NSW) Ltd ACN 003 004 322.
Law	The National Gas Law as set out in the schedule to the *National Gas (South Australia) Act 2008* (SA).
matched allocation quantity	Has the meaning given in Part 3 of Schedule 1 to the *Rules*.
meter	For *gas*, a device used to directly measure the mass or volume of *gas* passing through it and includes the associated equipment attached to the device to filter, control or regulate the flow of *gas*. For hot water, a device used to directly measure the volume of water passing through it.
meter number	A unique identification number allocated to a *meter*.
meter reading	An *actual meter reading, estimated meter reading* or *substituted meter reading*. A reference to a *meter reading* in respect of a particular date or *reading period* is to the *reading* that has most recently been included in the *metering database* of the relevant *Network Operator* in respect of that date or *reading period*.
meter reading frequency	The frequency at which the *Network Operator* will attempt to *read* a *meter* located at a *delivery point*.

metering data	The data collected under clause Error! Reference source not found..
metering database	A database maintained by a *Network Operator* or *AEMO* that includes relevant *MIRN* registry, *meter* data, *gas* quality data, energy calculations (including validations, estimations and substitutions) and energy data, pursuant to Error! Reference source not found..
metering installation	A *meter* and associated equipment and installations installed for a *delivery point*.
MIRN	(Meter Installation Registration Number) The numeric name of a *delivery point* as recorded at any time in the *metering database* of the *Network Operator*. A MIRN may cover more than one *metering installation*, but only one *FRO* may be associated with a MIRN at any time. A *MIRN* was previously known as a 'delivery point identifier' (DPI). The *MIRN* includes a *checksum*.
MIRN discovery request	In relation to a *delivery point* identified by reference to a *MIRN* or a *discovery address*, a request by a *User* or *AEMO* to a *Network Operator* for information contained in the *Network Operator's metering database* in relation to a *delivery point* which is (or may be) in that *Network Operator's network*.
miscellaneous reconciliation amount	For a *User*, a quantity of *gas* calculated under clause Error! Reference source not found..
MJ	One megajoule which equals 1 x 10^6 joules.
monthly RAB reduction target	Has the meaning given in clause Error! Reference source not found..
NERL	The National Energy Retail Law as set out in the schedule to the *National Energy Retail Law (South Australia) Act 2011* (SA), as applied as a law of New South Wales or the Australian Capital Territory (as applicable), under the *National Energy Retail Law (Adoption) Act 2012* (NSW) or the *National Energy Retail Law (ACT) Act 2014* (ACT) respectively.
net section load	Either: (a) for a *network section* other than an *STTM network section*, the net system load calculated under clause Error! Reference source not found. or revised under clause Error! Reference source not found.; or

	(b) for an *STTM network section*, the net system load calculated under clause Error! Reference source not found. or recalculated under clause Error! Reference source not found..
Network	In relation to a *Network Operator*, the distribution network described in its *applicable access arrangement.*
Network Operator	An entity (also commonly referred to as a distributor) that participates in the retail gas market of New South Wales and the Australian Capital Territory in the registrable capacity of a 'network operator' under the *Rules* and has registered with *AEMO* under the *Rules* in that capacity.
network receipt point	A point at which *gas* enters a *Network Operator's network*.
network section	Part of a *Network Operator's network* described as a 'network section' in the *applicable access arrangement* of the relevant *Network Operator* or, where the *applicable access arrangement* does not identify any network sections, a pipeline forming part of the relevant *network*.
new nominations timetable	Has the meaning given in clause Error! Reference source not found..
no balancing network section	A *network section* designated in the *balancing arrangements register* as a "no balancing network section".
no OBA network section	A *network section* designated in the *balancing arrangements register* as a "no OBA network section".
nomination day	The *gas day* for which a *User* must make nominations of *gas* to be injected into the *network* in accordance with the process outlined in clause Error! Reference source not found. or Error! Reference source not found..
nominations information	Information to be exchanged in accordance with clause Error! Reference source not found. or Error! Reference source not found. about the *gas* requirements in a *network section* for a *gas day*.
non-daily metered	Refers to a *delivery point* that is not *daily metered*.
non-STTM network section	A *network section* that is not an *STTM network section*.
OBA network section	A *network section* for which an *operational balancing arrangement* is in effect.
objection notice	A notice delivered to *AEMO* under clause Error! Reference source not found. objecting to a *transfer request*.
objection withdrawal notice	In relation to a *transfer request*, a notice delivered to *AEMO* under clause Error! Reference source not found..

occupancy factor	In relation to a *delivery point* supplied by a *volume boundary meter* or a *volume boundary hybrid* meter, the deemed average occupancy of medium-density or high-rise premises eligible for Type 2 estimations and substitutions in accordance with Attachment 2 and Attachment 3 respectively.
operational balancing arrangement (OBA)	An agreement between *a Network Operator* and *the transmission pipeline operators* to co-operate in the management of pipeline and *network* interfaces.
Participant	A person who participates in the retail gas market of New South Wales and the Australian Capital Territory in a registrable capacity under the *Rules*.
participant imbalance amount	The amount described in clause Error! Reference source not found. and calculated by *AEMO* under clause Error! Reference source not found..
permitted prospective period	In relation to a *transfer request*, the period of 90 *business days* commencing on (and including) the day on which the *transfer request* is delivered to *AEMO*.
pressure correction factor (PCF)	(Note: referred to as the volume correction factor (VCF) for some *networks*.) The value applied to reflect the difference in volume of *gas* at the pressure at which its volume is measured, and the volume of that *gas* at standard metric conditions.
prior imbalance account	(a) For a *User* in relation to an *OBA network section*, the cumulative difference between the total of the *User's confirmed nominations* for a *network receipt point* and the *User's* Withdrawal Quantity (defined in clause Error! Reference source not found.) for that *network receipt point* for all days prior to the *nomination day* for which metering information is available from *daily metered delivery points*, minus the *User's SCLP* for that *network receipt point*.
proposed transfer date	In relation to a *transfer request*, the day nominated in that *transfer request* as the day with effect from which the *User* who delivered the *transfer request* to *AEMO* is to be registered in the *AEMO metering database* as the *FRO* for the *delivery point* to which the *transfer request* relates.
prospective FRO	A *User* that wishes to become the *FRO* for a *delivery point*.
Publish	The posting of information on the *AEMO* website, or any other means specified in the *Gas Interface Protocol* for making the relevant information available to *Participants* and other persons who require it.

Read	The process of collecting figures or other information from a *meter* either directly or through being transmitted or transformed by electronic, radio, microwave, sonic or other means.
read failure notice	In relation to a *transfer request*, a notice delivered by *AEMO* pursuant to clause Error! Reference source not found..
reading period	The period between two consecutive *validated meter readings* for a *non-daily metered delivery point* (see clause Error! Reference source not found.).
reconciliation account	The residual quantity of *gas* for which a *User* will be required to nominate to compensate for *reconciliation amounts*.
reconciliation adjustment amount	The amount calculated under clause Error! Reference source not found..
reconciliation amount	The amount calculated under clause Error! Reference source not found. or revised under clause Error! Reference source not found. (as applicable).
re-energise	Has the meaning given in Part 1 of the *NERL*.
reference reading	The *validated meter reading* obtained on end date of a *reading period* (see clause Error! Reference source not found.).
Register of Weather Related Information	An industry reference document that specifies which weather station data must be used for the purposes of these Procedures.
registered matched allocation agreement	Has the meaning given in Part 3 of Schedule 1 to the *Rules*.
registered matched allocation agreement User	A *User* which is a party to a *registered matched allocation agreement*.
registration notice	A notice delivered by *AEMO* under clause Error! Reference source not found. or clause Error! Reference source not found. (as applicable).
relevant dispute	Has the meaning given in Part 15C of the *Rules*.
Retailer	An enity that participates in the retail gas market of New South Wales and the Australian Capital Territory in the registrable capacity of a 'retailer' under the *Rules*, and has registered with *AEMO* under the *Rules* in that capacity.
RoLR affected delivery point	A *delivery point* for which the *current FRO* is a *failed retailer* under a *RoLR notice* received by *AEMO*, and for which a *default RoLR* is recorded in *AEMO's metering database*.
RoLR event	Has the meaning given in Part 6 of the *NERL*.

RoLR notice	Has the meaning given in Part 6 of the *NERL*.
RoLR transfer date	Has the same meaning as "transfer date" in Part 6 of the *NERL*.
Rules	The National Gas Rules made in accordance with the *Law*.
scheduled read date	In respect of a *meter* for to a *delivery point*, a day on which the *Network Operator* is scheduled to *read* that *meter*.
SCLP	For a *User* in an *STTM network section* for a *gas day*, the *User's* share of change in linepack (in *MJ*) as calculated by *AEMO* under clause Error! Reference source not found..
Self Contracting User	An entity that participates in the retail gas market of New South Wales and the Australian Capital Territory in the registrable capacity of a 'self contracting user' under the *Rules*, and has registered with *AEMO* under the *Rules* in that capacity.
settlement period	For the purposes of clause Error! Reference source not found., 28 days or such other period as *AEMO* determines from time to time.
Shipper	A person contracted to supply *gas* to a *network receipt point* on behalf of a *User* or on behalf of a person from which the *User* purchases *gas* at that *network receipt point*.
site access information	In relation to a *meter*, information and safety instructions that are relevant to locating and *reading* that *meter*.
special read	A *read* undertaken other than on a *scheduled read date*.
special read date	The date nominated by a *User* as the date on which a *Network Operator* is to perform a *special read*.
special read request	A request for a *special read* in the form required by the *Gas Interface Protocol*.
street/suburb combination	In relation to a *MIRN discovery request*, the *discovery address* excluding the street number or its equivalent.
STTM	The short term trading market of New South Wales operating at the Sydney hub, as defined in Part 20 of the *Rules*.
STTM distribution system allocation	For a *User* in an *STTM network section* for a *gas day*, the sum of: (a) the *User's total daily withdrawals* for that *network section* for that *gas day*; (b) either the *User's* share of *net section load* for that *network section* for that *gas day* as calculated under clause Error! Reference source not found. or, if recalculation under clause Error! Reference source not found. is required, the *User's total non-daily metered withdrawals* calculated under clause Error! Reference source not found.; (c) the *User's SCLP* for that *network section* for that *gas day*;

	(d) the *User's SUAG* for that *network section* for that *gas day*; and (e) the *User's adjustment amount* for that *network section* for that *gas day*, if that *adjustment amount* has been calculated under clause Error! Reference source not found..
STTM facility allocation	Has the meaning given in Part 20 of the *Rules*.
STTM network section	The NSW Wilton *network section* and any other *network section* that becomes an *STTM network section* under clause Error! Reference source not found..
SUAG	For a *User* in an *STTM network section* for a *gas day*, the *User's* share of unaccounted for *gas* (in *MJ*) as calculated by the *Network Operator*.
substituted meter reading	A *reading* that is substituted under these Procedures for an *actual meter reading* in accordance with an *approved substitution methodology*.
temperature sensitivity factor	In relation to a delivery point, the incremental gas consumption at that *delivery point*; that is, the MJ per EDD calculated in accordance with Attachment 2 and Attachment 3.
TJ	Means one terajoule which equals 1 x 10^{12} joules.
total adjustment amount	For a *gas day* for a *network section*, the amount calculated under clause Error! Reference source not found..
total daily withdrawals	Either: (a) for a *network section* other than an *STTM network section*, an amount calculated under clause Error! Reference source not found.; or (b) for an *STTM network section*: (i) where the *User* is a *registered matched allocation agreement User*, the greater of zero and the amount calculated under clause Error! Reference source not found. minus the *matched allocation quantity* allocated to that *User* in respect of that *network section* under the relevant *registered matched allocation agreement*; or (ii) where the *User* is not a *registered matched allocation agreement User*, the amount calculated under clause Error! Reference source not found..
total distributed withdrawals	For a *User* in a *network section* for a *gas day*: (a) where that *network section* is a *no OBA Network section* or *OBA network section*, the sum calculated under clause Error! Reference source not found. or revised under clause Error! Reference source not found.; and

	(b) where that *network section* is an *STTM network section*, the amount calculated under clause Error! Reference source not found. or recalculated under clause Error! Reference source not found..
total estimated withdrawal	For a *User* in a *network section*: (a) where that *network section* is not an *STTM network section*, the amount calculated for a *nomination day* under clause Error! Reference source not found. or revised under clause Error! Reference source not found.; and (b) where that *network section* is an *STTM network section*, the amount calculated for a *gas day* under clause Error! Reference source not found..
total non-daily metered withdrawals	For a *User* in a *network section* for a *gas day*, the amount calculated under clause Error! Reference source not found..
total reconciliation amount	The sum calculated under clause Error! Reference source not found. or revised under clause Error! Reference source not found..
transfer error correction request	In relation to a *delivery point*, a request by a *User* to *AEMO* under clause Error! Reference source not found. to register that *User* in the *AEMO metering database* as the *FRO* for that *delivery point* on the basis that a *genuine transfer error* has occurred within the *error correction permitted period*.
transfer error correction request notification	A notification that *AEMO* has received a *transfer error correction request*, issued by *AEMO* under clause Error! Reference source not found..
transfer error correction withdrawal notice	In relation to a *transfer error correction request*, a notice delivered to *AEMO* under clause Error! Reference source not found..
transfer request	In relation to a *delivery point*, a request by a *User* to *AEMO* under clause Error! Reference source not found. to register that *User* in the *AEMO metering database* as the *FRO* for that *delivery point*.
transfer request notification	A notification that *AEMO* has received a *transfer request*, issued by *AEMO* under clause Error! Reference source not found..
transfer withdrawal notice	In relation to a *transfer request*, a notice delivered to *AEMO* under clause Error! Reference source not found..
transferable cumulative imbalance	For the purpose of clause Error! Reference source not found., a *User's* revised *cumulative imbalance* notified under clause Error! Reference source not found. for the last *nomination day* on which the *User* ceased to be a *FRO* for any *delivery points* in the *network section*.

transferable reconciliation account balance	For the purposes of clause Error! Reference source not found., a *User's reconciliation account* balance notified under clause Error! Reference source not found. for the *nomination day* on which the *User* applies to transfer its *reconciliation account* balance.
transmission pipeline operator	The party to an *operational balancing arrangement* that is not a *Network Operator*.
transportation agreement	An agreement made under an *applicable access arrangement* between a *Network Operator* and a *User* for the transportation of *gas* along the *Network Operator's network*.
User	A *Retailer* or a *Self Contracting User*.
validated meter reading	A *meter reading* that has been validated in accordance with an *approved validation methodology*.
volume boundary hybrid meter	A *gas meter* which measures the appliance-specific consumption (excluding centralised hot water systems) of a medium-density or high-rise premise containing multiple dwellings.
volume boundary meter	A *gas meter* which measures the total or appliance-specific consumption of a medium-density or high-rise premise containing multiple dwellings for which centralised hot water system(s) are the dominant appliance type.
weekly calculation day	Each Friday in a month, or where the last day of that month is a Thursday, that Thursday.
withdrawal quantity	Has the meaning given in clause 8.9.16.

A2.1 Gas Meters

(a) Criteria and EDD

A *Network Operator* must undertake an *estimated meter reading* in the circumstances required under clause 3.5 of these Procedures.

On each gas day *AEMO* must use its reasonable endeavours to calculate a New South Wales "effective degree day" or "EDD" value and a Australian Capital Territory EDD value for use in the calculation of Type 1 estimations prescribed in paragraph (b), and *publish* those EDDs by midnight on the next *business day* after the day to which the EDD applies.

The EDD calculations will be the EDD (NSW or ACT), calculated in accordance with clause A1.3, applicable to the *network section* to which the *meter* is connected.

(b) Type 1 Estimation Methodology (Gas non-daily metered)

A *Network Operator* must use this estimation methodology where the *delivery point* in respect of which the *estimated meter reading* is to be undertaken has at least 12 months' consumption history.

A *Network Operator* must utilise the calculated daily *base load* and the calculated usage per effective degree day for the relevant *delivery point* as follows:

(i) The *Network Operator* must estimate the *consumed energy* for a *basic meter* based on the weather measured in effective degree days and the *base load* and temperature sensitivity factor as follows:

Consumed energy = (BL x P) + (TSF x ΣEDD)

Where:

- *consumed energy* is the estimated *consumed energy* over the *reading period*;
- BL is the *base load*;
- P is the number of days in the *reading period*;
- TSF is the temperature sensitivity factor; and
- ΣEDD is the sum of the effective degree days over the *reading period*.

(ii) The *base load* is derived from the smallest *consumed energy* measured in a *reading period* during the summer period (defined as between 1 October and 31 March within the current 12 month period) according to the following formula:

BL = SE / PSE

Where:

- BL is the *base load*;
- SE is the smallest *consumed energy* (in terms of average daily consumption) between two consecutive *scheduled read dates* during the summer period; and
- PSE is the number of days in the *reading period* during the summer period.

(iii) The *temperature sensitivity factor* applies a weather impact to the *base load* by reference to the *effective degree day* for each day in the *reading period*. The *temperature sensitivity factor* is derived from the difference between:

(A) the largest *consumed energy* measured in a *reading period* during the winter period (between 1 April and 30 September within the current 12 month period); and

(B) the smallest *consumed energy* (in terms of average daily consumption) between two consecutive *meter readings* measured in a *reading period* during the summer period,

divided by the sum of the effective degree days for the *reading period* over which the largest *consumed energy* value was derived. This is represented by the following formula:

TSF = max {0, (LE – (BL x PLE)) / ΣEDD (LE)}

Where:

- TSF is the temperature sensitivity factor;
- LE is largest *consumed energy* between two consecutive scheduled *reads* during the winter period;
- BL is the *base load*;
- PLE is the number of days in the *reading period* during the winter period; and
- ΣEDD (LE) is the sum of the effective degree days over the *reading period* during the winter period.

(iv) The *Network Operator* must use the latest available effective degree days *published* by *AEMO*. Where the effective degree day for a *reading period* for a day is not available, the *Network Operator* must use the effective degree day for the previous day.

~~(iv)~~(v) For quarterly read meters which have at least 12 months' consumption history and are ineligible for Type 1 calculation of *base load* and *temperature sensitivity factor* due to *reading periods* not being wholly within defined summer and winter periods, the Network Operator may use readings between 23 September and 7 April for the purposes of calculating a *base load* and *reading periods* between 24 March and 7 October for the purposes of calculating the *temperature sensitivity factor*.

(c) Type 2 Estimation Methodology (Gas non-daily metered)

A *Network Operator* must use this estimation methodology where a *delivery point* in respect of which the *estimated meter reading* is to be undertaken has less than 12 months' consumption history.

A *Network Operator* must use the categories of ~~C~~*customers* in accordance with the *customer characterisation* as follows:

	NSW metropolitan	NSW Non-metropolitan
Residential	R1	R2
Residential medium-density high-rise	R3	R3
Business	B1	B2
	ACT metropolitan	
Residential	R1	
Residential medium-density high-rise	R2	
Business	B1	

(i) A *Network Operator* must calculate the average *base load* and average temperature sensitivity factor for each *customer characterisation* as follows:

(A) The average *base load* is:

- the sum of the *base load* consumption for all customers within that *Network Operator*'s *network* which have that *customer characterisation* and 12 months or more consumption history; divided by
- the number of *delivery points* within that *Network Operator*'s *network* which have that *customer characterisation* and 12 months or more consumption history.

(B) The average temperature sensitivity factor is:

- the sum of temperature sensitivity factors for all customers within that *Network Operator*'s *network* which have that *customer characterisation* and 12 months or more consumption history; divided by
- the number of *delivery points* within that *Network Operator*'s *network* which have that *customer characterisation* and 12 months or more consumption history.

(ii) A *Network Operator* must determine the estimated usage for a *delivery point* by applying the relevant average *base load* and average temperature sensitivity factor for that *delivery point* to each day occurring during the period to which the *estimated meter reading* relates. A *Network Operator* must use the latest available effective degree days *published* by *AEMO*. Where the effective degree day for a *reading period* for a day is not available, the *Network Operator* must use the effective degree day for the previous day.

(iii) A *Network Operator* must apply the applicable *average heating value* and pressure correction factors to the estimated *consumed energy* to determine the estimated *flow* for the period and the relevant *estimated meter reading*.

(iv) A *Network Operator* must determine the estimated usage for a *delivery point* metered by a *volume boundary meter* or a *volume boundary hybrid meter* by applying the relevant *base load, temperature sensitivity factor* and *occupancy factor* for that *delivery point* to each day occurring within the period to which the *estimated meter reading* relates. A *Network Operator* must apply effective degree days, applicable *average heating value* and *pressure correction factor* to derive *estimated consumed energy, flow* and *meter readings* in accordance with (ii) and (iii) above.

(v) The *base load* and *temperature sensitivity factor* for each *delivery point* metered by a *volume boundary meter* or a *volume boundary hybrid meter* will be determined by multiplying the number of dwellings supplied by the *volume boundary meter* or the *volume boundary hybrid meter* and the per dwelling *base load* and *temperature sensitivity factor* applicable to the connected appliances.

(vi) The per dwelling *base load* for *volume boundary meters* will be determined by the *Network Operator* in accordance with sub-clause (xi) by the aggregate

centralised hot water master *gas meter base load* consumption divided by the number of individual *hot water meters* associated with the same dataset of master *gas meters*.

(vii) The per dwelling *temperature sensitivity factor* for *volume boundary meters* will be determined by the *Network Operator* in accordance with sub-clause (xi) by the aggregate centralised hot water master *gas meter temperature sensitivity factor* divided by the number of individual *hot water meters* associated with the same dataset of master *gas meters*.

(viii) The per dwelling *base load* for *volume boundary hybrid meters* will be determined by the *Network Operator* in accordance with sub-clause (xi) by the aggregate *base load* of *gas meters* associated with *hot water meters* attached to a common *MIRN* divided by the number of *gas meters* in the same *MIRN* dataset.

(ix) The per dwelling *temperature sensitivity factor* for *volume boundary hybrid meters* will be determined by the Network Operator in accordance with sub-clause (xi) by the aggregate *temperature sensitivity factor* of *gas meters* associated with *hot water meters* attached to a common *MIRN* divided by the number of *gas meters* in the same *MIRN* dataset.

(x) The *occupancy factor* will have an initial value of 0.60 and be determined by the *Network Operator* in accordance with sub-clause (xi) by the aggregate consumption of *volume boundary meters* and *volume boundary hybrid meters* eligible for Type 2 Estimation Methodology with actual readings divided by the sum of Type 2 Estimation Methodology consumption as if 100% occupied for the same *MIRN* dataset (subject to the calculation result being no greater than 1).

~~(iii)~~(xi) A *Network Operator* must review and update initial per dwelling *volume boundary meter* and *volume boundary hybrid meter base load* and *temperature sensitivity factors* and *occupancy factor* by 30th September 2024 and then at least every 2 years thereafter.

A3.2 Gas Meters

(a) Type 1 Substitution Methodology (Gas non-daily metered)

A *Network Operator* must use this substitution methodology where the *delivery point* in respect of which the *substituted meter reading* is to be undertaken has at least 12 months' consumption history.

A *Network Operator* must utilise the calculated daily *base load* and the calculated usage per effective degree day for the relevant *delivery point* as follows:

(i) The *Network Operator* must estimate the *consumed energy* for a basic *meter* based on the weather measured in effective degree days and the *base load* and temperature sensitivity factor as follows:

Consumed energy = (BL x P) + (TSF x ΣEDD)

Where:

- *consumed energy* is the estimated *consumed energy* over the *reading period*;
- BL is the *base load*;
- P is the number of days in the *reading period*;
- TSF is the temperature sensitivity factor; and
- ΣEDD is the sum of the effective degree days over the *reading period*.

(ii) The *base load* is derived from the smallest *consumed energy* measured in a *reading period* during the summer period (defined as between 1 October and 31 March within the current 12 month period) according to the following formula:

BL = SE / PSE

Where:

- BL is the *base load*;
- SE is the smallest *consumed energy* between two consecutive scheduled *reads* during the summer period; and
- PSE is the number of days in the *reading period* during the summer period.

(iii) The *temperature sensitivity factor* applies a weather impact to the *base load* by reference to the effective degree day for each day in the *reading period*. The *temperature sensitivity factor* is derived from the difference between:

(A) the largest *consumed energy* measured in a *reading period* during the winter period (between 1 April and 30 September within the current 12 month period); and

(B) the smallest *consumed energy* between two consecutive scheduled *reads* measured in a *reading period* during the summer period,

divided by the sum of the effective degree days for the *reading period* over which the largest *consumed energy* value was derived. This is represented by the following formula:

TSF = max{0, (LE – (BL x PLE)) / Σ EDD (LE)}

Where:

- TSF is the temperature sensitivity factor;
- LE is largest *consumed energy* between two consecutive scheduled *reads* during the winter period;
- BL is the *base load*;
- PLE is the number of days in the *reading period* during the winter period; and
- ΣEDD (LE) is the sum of the effective degree days over the *reading period* during the winter period.

(iv) The *Network Operator* must use the latest available effective degree days published by AEMO. Where the effective degree day for a *reading period* for a day is not available, the *Network Operator* must use the effective degree day for the previous day.

~~(iv)~~(v) For quarterly read meters which have at least 12 months' consumption history and are ineligible for Type 1 calculation of *base load* and *temperature sensitivity factor* due to *reading periods* not being wholly within defined summer and winter periods, the Network Operator may use readings between 23 September and 7 April for the purposes of calculating a *base load* and *reading periods* between 24 March and 7 October for the purposes of calculating the *temperature sensitivity factor*.

(b) Type 2 Substitution Methodology (Gas non-daily metered)

A *Network Operator* must use this substitution methodology where the *delivery point* in respect of which the *substituted meter reading* is to be undertaken has less than 12 months' consumption history.

A *Network Operator* must use the categories of *customers* in accordance with the *customer characterisation* ~~*Network Operator*~~ as follows:

	NSW metropolitan	NSW Non-metropolitan
Residential	R1	R2
Residential medium-density high-rise	R3	R3
Business	B1	B2
	ACT metropolitan	
Residential	R1	
Residential medium-density high-rise	R2	
Business	B1	

(i) A *Network Operator* must calculate the average *base load* and average temperature sensitivity factor for each *customer characterisation* as follows:

(A) The average *base load* is:

- the sum of the *base load* consumption for all customers within that *Network Operator*'s *network* which have that *customer characterisation* and 12 months or more consumption history; divided by
- the number of *delivery points* within that *Network Operator*'s *network* which have that *customer characterisation* and 12 months or more consumption history.

(B) The average temperature sensitivity factor is:

- the sum of temperature sensitivity factors for all customers within that *Network Operator*'s *network* which have that *customer characterisation* and 12 months or more consumption history; divided by
- the number of *delivery points* within that *Network Operator*'s *network* which have that *customer characterisation* and 12 months or more consumption history.

(ii) A *Network Operator* must determine the substituted usage for a *delivery point* by applying the relevant average *base load* and average temperature sensitivity factor for that *delivery point* to each day occurring during the period to which the *substituted meter reading* relates. A *Network Operator* must use the latest available effective degree days *published* by AEMO. Where the effective degree day for a *reading period* for a day is not available, the *Network Operator* must use the effective degree day for the previous day.

(iii) A *Network Operator* must apply the applicable *average heating value* and *pressure correction factor* to the substituted *consumed energy* to derive the substituted *flow* for the period and the relevant *substituted meter reading*.

(iv) A *Network Operator* must determine the *substituted* usage for a *delivery point* metered by a *volume boundary meter* or a *volume boundary hybrid meter* by applying the relevant *base load*, *temperature sensitivity factor* and *occupancy factor* for that *delivery point* to each day occurring within the period to which the *substituted meter reading* relates. A *Network Operator* must apply effective degree days, applicable *average heating value* and *pressure correction factor* to derive *substituted consumed energy*, *flow* and *meter readings* in accordance with (ii) and (iii) above.

(v) The *base load* and *temperature sensitivity factor* for each *delivery point* metered by a *volume boundary meter* or a *volume boundary hybrid meter* will be determined by multiplying the number of dwellings supplied by the *volume boundary meter* or the *volume boundary hybrid meter* and the per dwelling *base load* and *temperature sensitivity factor* applicable to the connected appliances.

(vi) The per dwelling *base load* for *volume boundary meters* will be determined by the *Network Operator* in accordance with sub-clause (xi) by the aggregate centralised hot water master *gas meter base load* consumption divided by the number of individual *hot water meters* associated with the same dataset of master *gas meters*.

(vii) The per dwelling *temperature sensitivity factor* for *volume boundary meters* will be determined by the *Network Operator* in accordance with sub-clause (xi) by the aggregate centralised hot water master *gas meter temperature sensitivity factor* divided by the number of individual *hot water meters* associated with the same dataset of master *gas meters*.

(viii) The per dwelling *base load* for *volume boundary hybrid meters* will be determined by the *Network Operator* in accordance with sub-clause (xi) by the aggregate *base load* of *gas meters* associated with *hot water meters*

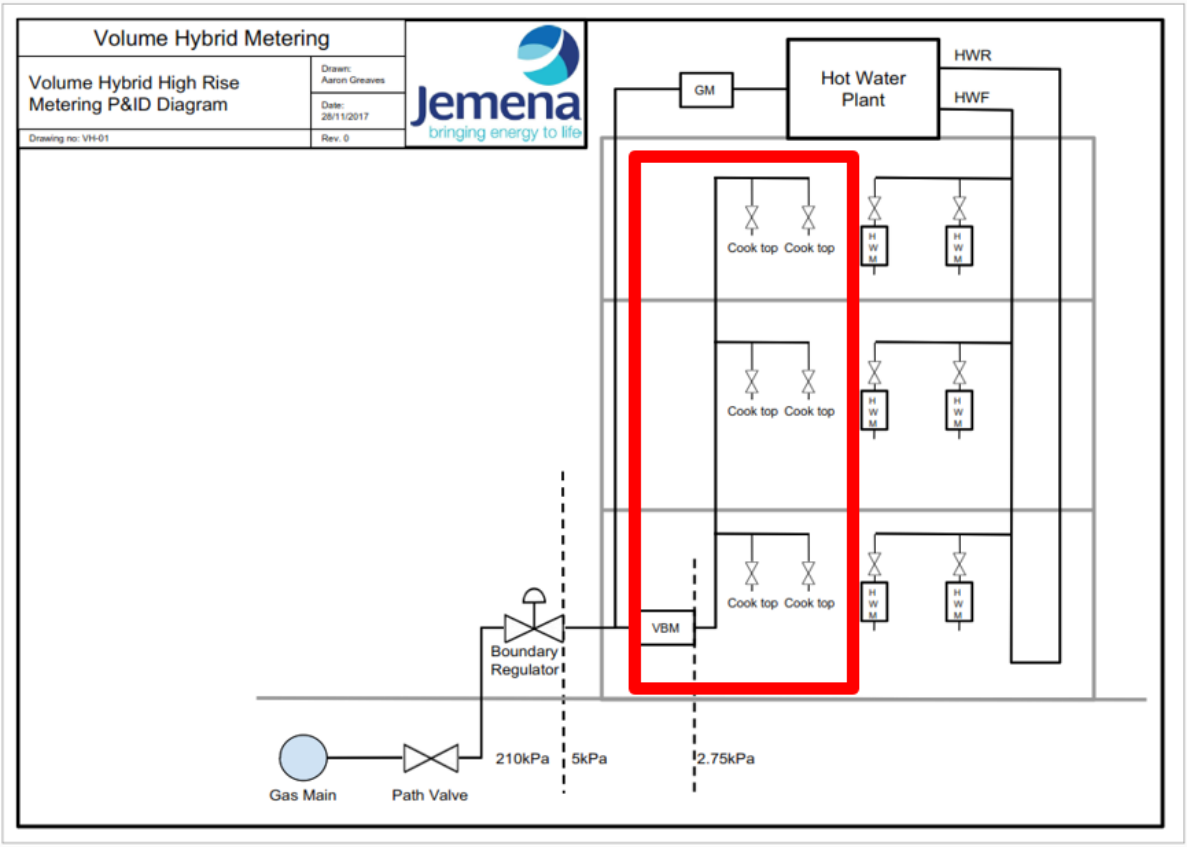
attached to a common *MIRN* divided by the number of *gas meters* in the same *MIRN* dataset.

(ix) The per dwelling *temperature sensitivity factor* for *volume boundary hybrid meters* will be determined by the Network Operator in accordance with sub-clause (xi) by the aggregate *temperature sensitivity factor* of *gas meters* associated with *hot water meters* attached to a common *MIRN* divided by the number of *gas meters* in the same *MIRN* dataset.

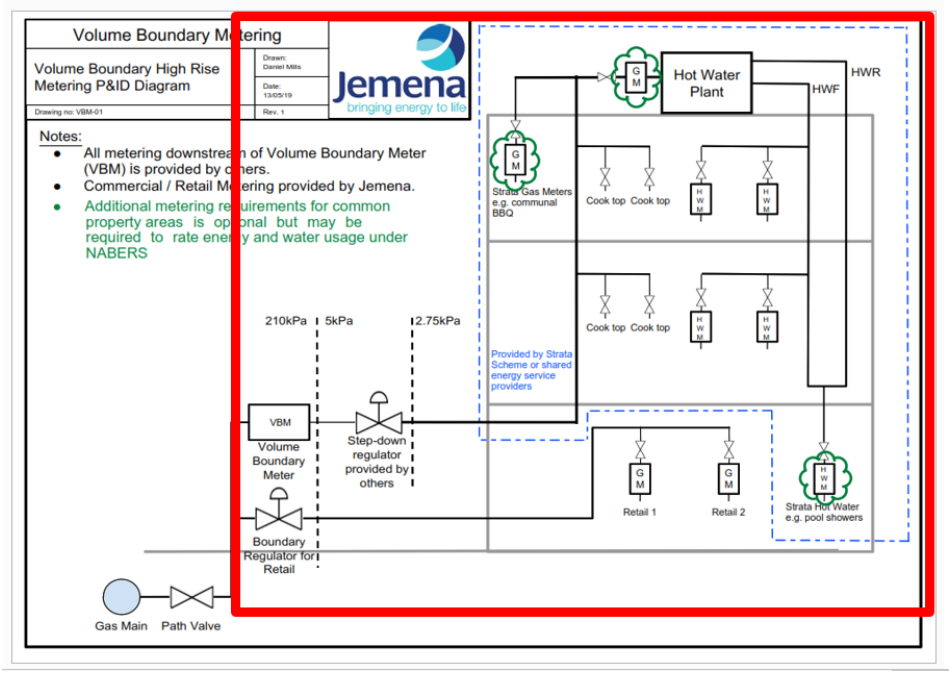
(x) The *occupancy factor* will have an initial value of 0.60 and be determined by the *Network Operator* in accordance with sub-clause (xi) by the aggregate consumption of *volume boundary meters* and *volume boundary hybrid meters* eligible for Type 2 Substitution Methodology with actual readings divided by the sum of Type 2 Substitution Methodology consumption as if 100% occupied for the same *MIRN* dataset (subject to the calculation result being no greater than 1).

~~(iii)~~(xi) A *Network Operator* must review and update initial per dwelling *volume boundary meter* and *volume boundary hybrid meter base load* and *temperature sensitivity factors* and *occupancy factor* by 30th September 2024 and then at least every 2 years thereafter.

ATTACHMENT B – VOLUME BOUNDARY HYBRID



ATTACHMENT C – VOLUME BOUNDARY METER



ATTACHMENT D – ANNUAL VOLUME BOUNDARY ENERGY BY DWELLINGS AND TYPE

Forecast Annual Energy (GJ)		
VB-type Dwellings	Hybrid Cooking	Pure Hot Water
10	23	142
20	47	285
50	117	712
75	175	1068
100	233	1425
200	467	2849
300	700	4274
400	934	5698
500	1167	7123
600	1401	8547
700	1634	9972
800	1867	11396
900	2101	12821
1000	2334	14245

Average VB installation

ATTACHMENT E – INDICATIVE PER-DWELLING BASE LOAD, TEMPERATURE SENSITIVITY FACTOR AND OCCUPANCY FACTORS

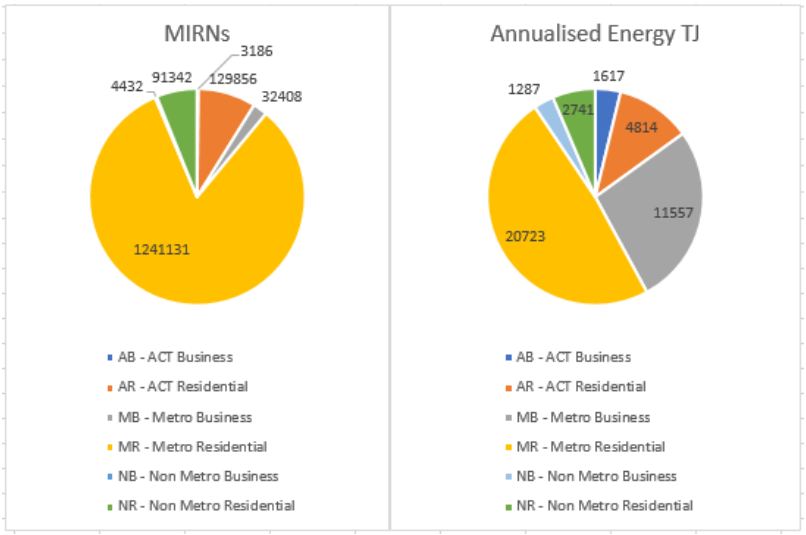
Indicative per dwelling Volume Boundary and Volume Boundary Hybrid Base Loads and Temperature Sensitivity Factors

Region	Meter Type	Base Load MJ/day	Temperature Sensitivity Factor MJ/EDD
NSW	Volume Boundary	33.68	1.22
	Volume Boundary Hybrid	3.59	0.64
ACT	Volume Boundary	33.68	1.22
	Volume Boundary Hybrid	1.75	0.44

Indicative Occupancy Factor: 0.60

ATTACHMENT F – BL AND TSF CUSTOMER CHARACTERISATIONS

Current State (indicative MIRN and Energy values)



Note:

"Metro Business" is "RMP Metropolitan Business"

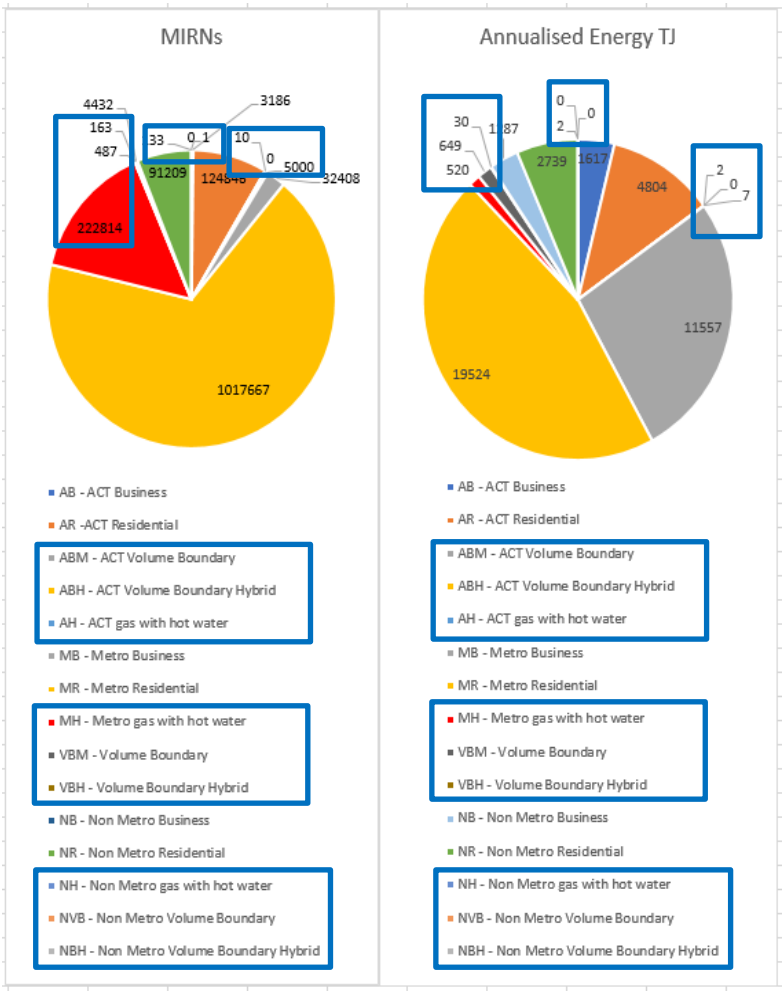
"Metro Residential" is "RMP Metropolitan Residential"

"Non Metro Business" is "RMP Non-metropolitan Business"

"Non Metro Residential" is "RMP Non-metropolitan Residential"

Proposed State (indicative MIRN and energy values)

Note: Additional characterisations beyond current RMP will be from segmentation in JGN's internal systems.



ATTACHMENT G – PPC RESPONSE TEMPLATE

The PPC response template has been attached separately to this document. There are two sections in the template:

- Section 1 seeks feedback on AEMO's examination of the proposal in Sections 1–9 (i.e., whether AEMO has correctly captured the requirements and surrounding context of the proposal)
- Section 2 seeks feedback on the proposed changes listed in Section 3 and attachment A.

Anyone wishing to make a submission to this PPC consultation are to use this response template. Submissions close 21 June 2021 and should be emailed to grcf@aemo.com.au