AEMO Victorian Pressure Correction Factors

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Current version release details

Version	Effective date	Summary of changes
2.0	1 May 2024	Updated AEMO Pressure Correction factors to account for the implementation of hydrogen blending as required by the Wholesale Market Metering Procedures.

Note: There is a full version history at the end of this document.

1. Pressure Correction Factors

1.1. Purpose and scope

This report contains the pressure correction factors to be used in the Victorian Market for the conversion of uncorrected flows to corrected flows at standard pressures and temperatures.

Further information on the calculation of converting gas flows to energy can be found in the Energy Calculation Procedures which is part of the Wholesale Market Metering Procedures and are referred to in the Retail Market Procedures (Victoria).

1.2. Definitions and interpretation

Terms defined in the National Gas Law and the NGR have the same meanings in this document unless otherwise specified in this clause.

Defined terms/Terms defined in the NGR are intended to be identified in this document by italicising them, but failure to italicise a defined term does not affect its meaning.

1.2.1. Interpretation

The following principles of interpretation apply to these Procedures unless otherwise expressly indicated:

(a) This document is subject to the principles of interpretation set out in Schedule 2 of the National Gas Law.

(b) This is a Technical Document supporting the operation of the Wholesale Market Metering Procedures and the Retail Market Procedures (Victoria) and should be interpreted in the context of these Procedures.

(c) The PCF to be used in calculation should represents the blend of hydrogen that minimises the metering uncertainty as required by the Wholesale Market Metering Procedures.

1.3. Related documents

The following documents support this Procedure.

Reference	Title	Location
Metering Procedures	Wholesale Market Metering Procedures (Victoria)	AEMO website
Retail Market Procedures	Retail Market Procedures (Victoria)	AEMO website

1.4. Document Change Process

AEMO may need to consult on the Pressure Correction Factors due to AEMO being advised of changes in Australian Standards or International Standards or at the request of *responsible person* for a *metering installation*.

A change to this document may be undertaken separately to a consultation on the Wholesale Market Metering Procedures by using the consultation required under Part 15B of the NGR.

1.5. Pressure Correction Factors

The Pressure Correction Factors are used to convert the gas volumes as measured by basic meters to the standard volume which is then multiplied by the average heating value for the billing period to obtain the energy. These pressure correction factors are referenced by the *energy calculation procedures*.

The above Pressure Correction Factors are based on:

(a) Standard pressure of 101.325 kPa

(b) Nominal atmospheric pressure of 101.325 kPa

(c) Standard temperature of 15°C

(d) Deemed metering temperature of 15°C

Table 1 is consistent with the applicable Industry Standard listed in section 3.3 of the Wholesale Market Metering Procedures, calculations of gas compressibility based on:

(a) 2.15 mole% CO2

(b) 0.85 mole% N2

(c) 0.611 Specific gravity

AEMO has also calculated pressure correction factors using AGA 8 with the compositions in Table 2 for blends of natural gas and 10 vol% hydrogen (H_2):

The pressure correction factors are shown in Table 1 below.

Table 1 Pressure Correction Factors

NOMINAL PRESSURE AT METER (IN kPa GAUGE)	PRESSURE CORRECTION FACTOR (natural gas, NX-19)	PRESSURE CORRECTION FACTOR (10 vol% H_2, AGA 8)
1.1	1.0109	1.0092
1.25	1.0123	1.0107
1.5	1.0148	1.0132
2.5	1.0247	1.0232
2.60	1.0257	1.0242
2.75	1.0272	1.0257
4	1.0396	1.0376
5	1.0495	1.0476
7	1.0692	1.0673
7.5	1.0742	1.0722
10	1.0989	1.0969
12	1.1188	1.1166
15	1.1484	1.1463
18	1.1781	1.1759

NOMINAL PRESSURE AT METER (IN kPa GAUGE)	PRESSURE CORRECTION FACTOR (natural gas, NX-19)	PRESSURE CORRECTION FACTOR (10 vol% H_2, AGA 8)
20	1.1979	1.1957
30	1.2970	1.2944
40	1.3960	1.3932
60	1.5942	1.5910
70	1.6934	1.6900
80	1.7927	1.7888
100	1.9913	1.9869
110	2.0907	2.0860
120	2.1901	2.1850
140	2.3891	2.3834
170	2.6879	2.6810
190	2.8873	2.8798
200	2.9872	2.9792
210	3.0870	3.0784
250	3.4866	3.4767
300	3.9873	3.9747
350	4.4890	4.4740
400	4.9922	4.9741
450	5.4961	5.4752

AEMO used the below compositions for calculating the 10% H_2 blended PCFs, based on a representative composition of the gas in the DTS.

Table 2 Gas Compositions for use in AGA 8

Injection	Representative DTS Natural Gas	10% H_2
C1	91.8000	82.6200
C2	4.1748	3.7573
C3	0.7902	0.7112
C4I	0.0706	0.0635
C4N	0.0825	0.0743
C5I	0.0311	0.0280
C5N	0.0202	0.0182
C6	0.0306	0.0275
N2	0.8500	0.7650
CO2	2.1500	1.9350
H2	0.0000	10.0000
Total Mole %	100.0000	100.0000

Version release history

Version	Effective date	Summary of changes
1.0	28 August 2015	Initial publication