IMPACT & IMPLEMENTATION REPORT – SUMMARY SECTION
(For AEMO to complete and administer)

Issue Number	IN007/18.		
Impacted Jurisdiction (s)	NSW & ACT Gas Retail Markets.		
Proponent	Tim Sheridan	Company	Jemena
Affected Gas Markets(s) ▪ Retail ▪ Wholesale ▪ Bulletin Board ▪ STTM	Retail Gas	Consultation process (Ordinary or Expedited)	Ordinary
Industry Consultative forum(s) used	GRCF	Date Industry Consultative forum(s)consultation concluded	1/10/2018
Short Description of change(s)	Proposal to amend the Hot Water Estimation and Substitution Methodology as described in the NSW/ACT Retail Market Procedure (RMP).		
Procedure(s) or Documentation impacted	Refer to documents listed in section 2 of this Impact and Implementation Report (IIR).		
Summary of the change(s)	Section A2.2 of Attachment 2 of the RMP details the Approved Estimation Methodology for Hot Water Meters and Section A3.3 of Attachment 3 details the Approved Substitution Methodology for Hot Water Meters. Jemena has completed a review of the existing hot water estimation and substitution methodology in the NSW/ACT gas retail market and identified potential changes to the seasonality factors specified in Method W2 of the Retail Market Procedures (RMP).		
I&IR Prepared By	Danny McGowan	Approved By	Michelle Norris
Date I&IR published	8 October 2018	Date Consultation under 135EE or 135EF concludes	2 November 2018
Contact address for written responses	Danny McGowan, Australian Energy Market Operator, GPO Box 2008, Melbourne VIC 3001.		
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IMPACT & IMPLEMENTATION REPORT – DETAILED REPORT SECTION

CRITICAL EXAMINATION OF PROPOSAL	
1. Description of change(s) and reasons for change(s)	**Description of change:** Jemena has completed a review of the existing hot water estimation and substitution methodology in the NSW/ACT gas retail market and identified potential changes to the seasonality factors specified in Method W2 of the Retail Market Procedures (RMP). <u>Current RMP Definition</u> Section A2.2 of Attachment 2 of the RMP details the Approved Estimation Methodology for Hot Water Meters and Section A3.3 of Attachment 3 details the Approved Substitution Methodology for Hot Water Meters. In summary, there are 3 estimation and substitution method types currently used to estimate and substitute hot water meter readings. • **Method W1**: at least 365 days consumption history – calculates estimates based on the corresponding same quarter for last year's consumption. e.g: Q2 in 2016 will be used to calculate Q2 in 2017. • **Method W2**: <365 days consumption history – calculates estimates based on immediately preceding period of consumption with weighted seasonality factors. E.g: Q2 in 2017 relates to Q1 in 2017. • **Method W3**: W1 and W2 cannot be applied – calculates estimates by applying the lowest consumption value calculated from these 2 methods: a) using an average consumption for the grouped sub-meters; or b) using the current consumption of plausible reads from the grouped sub-meters and the master water meter. The outcomes from the above calculations are provided to Retailers and AEMO via the MeterDataNotification (MDN) transaction. <u>Proposed Changes</u> Amend the seasonality factors for **Method W2** as follows:

	(A) Multiply Lest by ~~0.5~~0.7 if the last bill was read in Aug/Sep/Oct. (B) Divide Lest by ~~1.5~~1.25 if the last bill was in Jun/Jul/Nov/Dec. (C) Multiply Lest by ~~2~~1.4 if the month of the estimate-to is Aug/Sep/Oct. (D) Multiply Lest by ~~1.5~~1.3 if the month of the estimate-to is Jun/Jul/Nov/Dec. **Reasons for change(s)** These changes are expected to reduce estimation and substitution volatility which can lead to higher bills for consumers, especially for winter months where estimated consumption may have doubled from previous consumption.
2. Reference documentation ▪ Procedure Reference ▪ GIP/Specification Pack Reference ▪ Other Reference	Retail Market Procedures (NSW/ACT) – V18. Customer Impact Analysis - Refer to Attachment B. Jemena's Seasonal Factor Analysis Approach - Refer to Attachment C. Master water meter consumption data - Refer to Attachment D.
3. The high level details of the change(s) to the existing Procedures This includes: ▪ A comparison of the existing operation of the Procedures to the proposed change to the operation of the Procedures ▪ A marked up version of the Procedure change (see Attachment A)	Update the Method W2 seasonality factors prescribed in the RMP for the hot water estimation and substitution. See Attachment A for further details.
4. Explanation regarding the order of magnitude of the change (eg: material, non-material or non-substantial)	AEMO will need to make minor amendments to RMP and in terms of system and process changes, Jemena will need to make non-material system changes. See section 6 of this IIR for further details.

ASSESSMENT OF LIKELY EFFECT OF PROPOSAL	
5. Overall Industry Cost / benefit (tangible / intangible / risk) analysis and/or cost estimates	In the Proposed Procedure Change (PPC) that was issued in mid-September, AEMO noted that there are no retail market process or system impacts for Retailers. None of the responses received from the Retailers raised any concerns relating to the cost to implement this change. Jemena have indicated their costs to be non-material. AEMO's view is therefore the overall cost to implement this change is minimal. In terms of benefits, there are no tangible benefits however an intangible benefit is more actuate hot water readings for instances where estimations are required.
6. The likely implementation effect of the change(s) on stakeholders (e.g. Industry or end-users)	The proposed changes are minor drafting amendments to the RMP. Jemena will need to make non-material system changes to be consistent with these proposed seasonality factors. There are no changes to the MDN transaction fields or formats therefore there are no system or process changes for AEMO or the Retailers because of this change.
7. Testing requirements	None required.
8. AEMO's preliminary assessment of the proposal's compliance with section 135EB: - consistency with NGL and NGR, - regard to national gas objective - regard to any applicable access arrangements	<u>Consistency with NGL and NGR:</u> AEMO's view is that the proposed change is consistent with the NGL and NGR. The proposed change promotes consistency across four jurisdictions. <u>National gas objective</u> *"Promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas."* It is AEMO's view that this change removes any costs associated with unnecessary differences in process and procedures, and is in the long-term interests of consumers as it promotes clarity and consistency. <u>Applicable access arrangements</u> AEMO's view is that the proposed change is not in conflict with existing Access Arrangements.
9. Consultation Forum Outcomes (e.g. the conclusions made on the change(s) whether there was unanimous approval, any dissenting views)	On 17 September 2018 AEMO published on its website a Proposed Procedure Change (PPC) that recommended Section A2.2 of Attachment 2 of the RMP details the Approved Estimation Methodology for Hot Water Meters and Section A3.3 of Attachment 3 details the Approved Substitution Methodology for Hot Water Meters. Registered participants and interested stakeholders were invited to make submissions which closed on 1 October 2018.

	AEMO received submissions from AGL, Origin Energy and Jemena and all responses supported the implementation of this change. See Attachment E for further details.

RECOMMENDATION(S)	
10. Should the proposed Procedures be made, (with or without amendments)?	AEMO recommends that the changes be made as proposed in Attachment A.
11. If applicable, a proposed effective date for the proposed change(s) to take effect and justification for that timeline.	Subject to all necessary approval's AEMO is targeting to implement this initiative on 14 December 2018. To achieve this AEMO proposes the following timeline • Issue IIR on 8 October 2018; • Submission on IIR close 2 November 2018; • AEMO decision on 19 November 2018; and • Effective date 14 December 2018.

ATTACHMENT A – DOCUMENTATION CHANGES (SEE SECTION 3)
Proposed changes: Retail Market Procedures – NSW/ACT
Blue represents additions Red and strikeout represents deletions – Marked up changes

A2.2 Hot Water Meters

(a) Application

The estimation of *hot water meter readings* and consumption utilises the existing methodology applicable in NSW and the ACT for buildings with centralised hot water systems (CHWS). If the scheduled *reading* of *meters* (master *meters* and sub-*hot water meters*) in a CHWS has been completed with one or more resulting "missed" *readings* (*readings* that cannot be obtained due to blocked access, safety hazards, *meter* fault or other factors), or *readings* that fail validation, an estimate for each missed or failed *reading* will be calculated as follows.

(b) Method W1: Hot Water Estimation Based on Corresponding Past Year Period

If the *meter* whose consumption is to be estimated has at least 365 calendar days of *validated meter reading* history with the same *Customer*, calculate MJest and Rest, the *meter*'s estimated *consumed energy* and *meter reading* index respectively, as follows:

(i) Examine the *meter*'s *reading* history for a qualifying corresponding past year period, determined as follows:

(A) Calculate Dest, the number of billing days in the period to be estimated, from the date of the last *validated meter reading* to the end date of the estimation period.

(B) Subtract 365 days from the last *validated meter reading* (Rprev) and the estimation period's end date to obtain the corresponding past year period's start and end dates (Dp_start and Dp_end),

(C) Examine the *meter*'s *reading* history for a qualifying corresponding past year period meeting the following criteria:

- Its start and end dates exactly or closely match Dp_start and Dp_end to within 10 calendar days on either side of Dp_start and Dp_end.
- The number of billing days Dcpyp in the corresponding past year period must be within plus or minus 10 calendar days of Dest.
- The *meter readings* in the corresponding past year period must be *validated meter readings*.

(ii) If a qualifying corresponding past year period is found:

(A) Calculate the raw metered units (MUraw) from the qualifying corresponding past period standardised to the number of days to be estimated (Dest).

(B) Convert MUraw to standard litres (L) by:

- Multiplying MUraw by the *meter* model's multiplier number.
- Multiplying the result in (a) by 4.546 to convert from imperial gallons to litres, if the hot water *meter* is read in imperial units.

(iii) Calculate the average daily litres (Ld_avg) for the qualifying corresponding past year period by dividing L by Dcpyp.

(iv) Multiply Ld_avg by Dest to obtain the estimated number of litres Lest for the estimation period.

(v) Multiply Lest by CF, the CHWS's *common factor* (in MJ per litre) in the current *reading period*, to obtain MJest, the *meter*'s estimation *consumed energy*.

(vi) Add Lest to Rprev to obtain Rest, the *estimated meter reading* index.

(vii) Populate MJest and Rest into the MDN (MeterDataNotification) to be provided to the *delivery point*'s current *FRO* and AEMO.

(c) Method W2: Hot Water Estimation Based on Immediately Preceding Period

If the *meter* whose *reading* is to be estimated has less than 365 days of validated *meter reading* history, or a qualifying corresponding past year period is not found, examine the *meter*'s *reading* history for an immediately preceding period with a *validated meter reading* that is an *actual meter reading*. If such a *reading* is found:

(i) Retrieve the preceding period's *meter reading* (Rprev), raw *metered* units (MUraw) and number of billing days (Dprev).

(ii) Convert MUraw to standard *metered* units (L) by:

(A) Multiplying MUraw by the *meter* model's multiplier number.

(B) Multiplying the result in (a) by 4.546 to convert from imperial gallons to litres, if the *meter* is a *hot water meter reading* in imperial units.

(iii) Calculate the litres (Ld_avg) by dividing L by Dprev.

(iv) Calculate the estimated litres (Lest) by multiplying Ld_avg by Dest.

(v) Adjust Lest to reflect seasonality (higher gas usage in cold months, lower in warm months):

(A) Multiply Lest by ~~0.50~~ 0.70 if the last bill was Aug/Sep/Oct.

(B) Divide Lest by ~~1.50~~ 1.25 if the last bill was in Jun/Jul/Nov/Dec.

(C) Multiply Lest by ~~2.00~~ 1.40 if the month of the estimate-to is Aug/Sep/Oct.

(D) Multiply Lest by ~~1.50~~ 1.30 if the month of the estimate to is Jun/Jul/Nov/Dec.

(vi) Multiply Lest by CF, the CHWS's *common factor* (in MJ per litre) in the current *reading period*, to obtain MJest, the *meter*'s estimated *consumed energy*.

(vii) Add Lest to Rprev to obtain Rest, the *estimated meter reading* index.

(viii) Populate MJest and Rest into the MeterDataNotification to be provided to the *delivery point*'s current *FRO* and AEMO.

(d) Method W3: Where Methods W1 and W2 cannot be applied

If the *meter* whose consumption is to be estimated has (a) less than 365 calendar days of validated *meter reading* history with the same customer, or (b) its *reading* in the immediately preceding period is not validated, AND (c) the scheduled *read* of all

meters in the CHWS has been completed (whether *readings* have been successfully obtained or otherwise for all *meters* in the CHWS), for any *meter* whose *reading* was not successfully obtained or failed validation, calculate MJest and Rest, the *meter*'s estimated *consumed energy* and *meter reading* index, using the following steps:

(i) Calculate Li_est, *meter* i's estimated litres, as:

Li_est = min (Average litres of sub-*meters* with *validated meter readings*, Average "residual" litres of sub-*meters* without *validated meter readings*)
Li_est = min ((ΣLj_validated / Nvalidated), ((LHW_master - Σ Lj_validated) / Nest))
Where:

- Ri_est is the *meter reading* to be estimated for sub-*hot water meter* i,
- Ri_prev is *meter* i's previous *validated meter reading*,
- Li_est is the metered units in litres to be estimated for *meter* i,
- Lj_validated is the *validated* metered units in litres of sub-hot water *meter* j,
- LHW_master is the number of *metered* units in litres measured by the CHWS's master *hot water meter* for the period to be estimated,
- N is the total number of sub-*hot water meters* in the CHWS,
- Nest is the number of sub-*hot water meters* in the CHWS that failed validation and require estimation in the current *reading period*.
- Nvalidated is the number of sub-*meters* in the CHWS with validated *readings* in the current *reading period*,
- N = Nvalidated + Nest and 0<= Nvalidated , Nest <= N.

If a master hot water *meter* does not exist in the CHWS, then
Li_est = Average litres of sub-*meters* with validated *readings*
= ΣLj_validated / Nvalidated.

(ii) Calculate Ri_est the *estimated meter reading* index, as:

Ri_est = Li_est + Ri_prev

(iii) Multiply Li_est by CF, the CHWS's common factor (in MJ per litre) in the current *reading period*, to obtain MJi_est, the *meter*'s estimated *consumed energy*.

(iv) Populate MJi_est and Ri_est into the MeterDataNotification to be provided to the *FRO* and AEMO.

A3.3 Hot Water Meters

(a) Application

The substitution of *hot water meter readings* and consumption utilises the existing methodology applicable in NSW and the ACT for buildings with centralised hot water systems (CHWS). If the scheduled *reading* of *meters* (master *meters* and sub-*hot water meters*) in a CHWS has been completed with one or more resulting "missed" *readings* (*readings* that cannot be obtained due to blocked access, safety hazards, *meter* fault or other factors), or *readings* that fail validation, an estimate for each missed or failed *reading* will be calculated as follows.

(b) Method W1: Hot Water Substitution Based on Corresponding Past Year Period

If the *meter* whose consumption is to be substituted has at least 365 calendar days of *validated meter reading* history with the same *Customer*, calculate MJest and Rest, the *meter*'s substituted *consumed energy* and *meter reading* index respectively, as follows:

(i) Examine the *meter*'s *reading* history for a qualifying corresponding past year period, determined as follows:

(A) Calculate Dest, the number of billing days in the period to be substituted, from the date of the last *validated meter reading* to the end date of the substitution period.

(B) Subtract 365 days from the last *validated meter reading* (Rprev) and the substitution period's end date to obtain the corresponding past year period's start and end dates (Dp_start and Dp_end),

(C) Examine the *meter*'s *reading* history for a qualifying corresponding past year period meeting the following criteria:

- Its start and end dates exactly or closely match Dp_start and Dp_end to within 10 calendar days on either side of Dp_start and Dp_end.
- The number of billing days Dcpyp in the corresponding past year period must be within plus or minus 10 calendar days of Dest.
- The *meter readings* in the corresponding past year period must be *validated meter readings*.

(ii) If a qualifying corresponding past year period is found:

(A) Calculate the raw metered units (MUraw) from the qualifying corresponding past period standardised to the number of days to be substituted (Dest).

(B) Convert MUraw to standard litres (L) by:

- Multiplying MUraw by the *meter* model's multiplier number.
- Multiplying the result in (a) by 4.546 to convert from imperial gallons to litres, if the hot water *meter* is read in imperial units.

(iii) Calculate the average daily litres (Ld_avg) for the qualifying corresponding past year period by dividing L by Dcpyp.

(iv) Multiply Ld_avg by Dest to obtain the substituted number of litres Lest for the substitution period.

(v) Multiply Lest by CF, the CHWS's *common factor* (in MJ per litre) in the current *reading period*, to obtain MJest, the *meter*'s substituted *consumed energy*.

(vi) Add Lest to Rprev to obtain Rest, the *substituted meter reading* index.

(vii) Populate MJest and Rest into the MDN (MeterDataNotification) to be provided to the *delivery point*'s current *FRO* and AEMO.

(c) Method W2: Hot Water Substitution Based on Immediately Preceding Period

If the *meter* whose *reading* is to be substituted has less than 365 days of validated *meter reading* history, or a qualifying corresponding past year period is not found, examine the *meter*'s *reading* history for an immediately preceding period with a *validated meter reading* that is an *actual meter reading*. If such a *reading* is found:

(iii) Retrieve the preceding period's *meter reading* (Rprev), raw *metered* units (MUraw) and number of billing days (Dprev).

(iv) Convert MUraw to standard *metered* units (L) by:

(A) Multiplying MUraw by the *meter* model's multiplier number.

(B) Multiplying the result in (a) by 4.546 to convert from imperial gallons to litres, if the *meter* is a *hot water meter reading* in imperial units.

(iii) Calculate the litres (Ld_avg) by dividing L by Dprev. (iv) Calculate the substituted litres (Lest) by multiplying Ld_avg by Dest.

(v) Adjust Lest to reflect seasonality (higher gas usage in cold months, lower in warm months):

(A) Multiply Lest by ~~0.50~~ 0.70 if the last bill was Aug/Sep/Oct.

(B) Divide Lest by ~~1.50~~ 1.25 if the last bill was in Jun/Jul/Nov/Dec.

(C) Multiply Lest by ~~2.00~~ 1.40 if the month of the estimate-to is Aug/Sep/Oct. .

(D) Multiply Lest by ~~1.50~~ 1.30 if the month of the estimate to is Jun/Jul/Nov/Dec.

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(vi) Multiply Lest by CF, the CHWS's *common factor* (in MJ per litre) in the current *reading period*, to obtain MJest, the *meter*'s substituted *consumed energy*.

(vii) Add Lest to Rprev to obtain Rest, the *substituted meter reading* index.

(viii) Populate MJest and Rest into the MeterDataNotification to be provided to the *delivery point*'s current *FRO* and AEMO.

(d) Method W3: Where Methods W1 and W2 cannot be applied

If the *meter* whose consumption is to be substituted has (a) less than 365 calendar days of validated *meter reading* history with the same customer, or (b) its *reading* in the immediately preceding period is not validated, AND (c) the scheduled *read* of all *meters* in the CHWS has been completed (whether *readings* have been successfully obtained or otherwise for all *meters* in the CHWS), for any *meter* whose *reading* was not successfully obtained or failed validation, calculate MJest and Rest, the *meter*'s substituted *consumed energy* and *meter reading* index, using the following steps:

(v) Calculate Li_est, *meter* i's substituted litres, as:

Li_est = min (Average litres of sub-*meters* with *validated meter readings*, Average "residual" litres of sub-*meters* without *validated meter readings*)
Li_est = min ((ΣLj_validated / Nvalidated), ((LHW_master - Σ Lj_validated) / Nest))
Where:

- Ri_est is the *meter reading* to be substituted for sub-*hot water meter* i,
- Ri_prev is *meter* i's previous *validated meter reading*,
- Li_est is the metered units in litres to be substituted for *meter* i,
- Lj_validated is the *validated* metered units in litres of sub-hot water *meter* j,
- LHW_master is the number of *metered* units in litres measured by the CHWS's master *hot water meter* for the period to be substituted,
- N is the total number of sub-*hot water meters* in the CHWS,
- Nest is the number of sub-*hot water meters* in the CHWS that failed validation and require substitution in the current *reading period*.
- Nvalidated is the number of sub-*meters* in the CHWS with validated *readings* in the current *reading period*,
- N = Nvalidated + Nest and 0<= Nvalidated , Nest <= N.

If a master hot water *meter* does not exist in the CHWS, then
Li_est = Average litres of sub-*meters* with validated *readings*
= ΣLj_validated / Nvalidated.

(vi) Calculate Ri_est the *substituted meter reading* index, as:

Ri_est = Li_est + Ri_prev

(vii) Multiply Li_est by CF, the CHWS's common factor (in MJ per litre) in the current *reading period*, to obtain MJi_est, the *meter*'s substituted *consumed energy*.

(viii) Populate MJi_est and Ri_est into the MeterDataNotification to be provided to the *FRO* and AEMO.

ATTACHMENT B – Customer Impact Analysis (This information supplied by Jemena)

Jemena's analysis of actual water meter reading data has identified an opportunity to update Method W2 seasonality factors and improve customer experience through more accurate hot water readings for instances where estimations or substitutions are required.

The water meter reading and consumption data used in Jemena's analysis is based on actual data for approx. 3,500 master water meters, covering around 108,000 sub-meters, for the period January 2017 to March 2018.

As detailed in Graph 1, the proposed seasonality factors result in less variability in colder months where typically the most gas consumption occurs. Under this proposal, the factor reduced from a maximum 2.0 to 1.4 during the cooler periods and during the warmer months the minimum the factor increased is from 0.5 to 0.7.

A month-by-month comparison of the proposed and current seasonality factors is detailed in Table 1.

Graph 1 - Proposed Change in Seasonality Factors

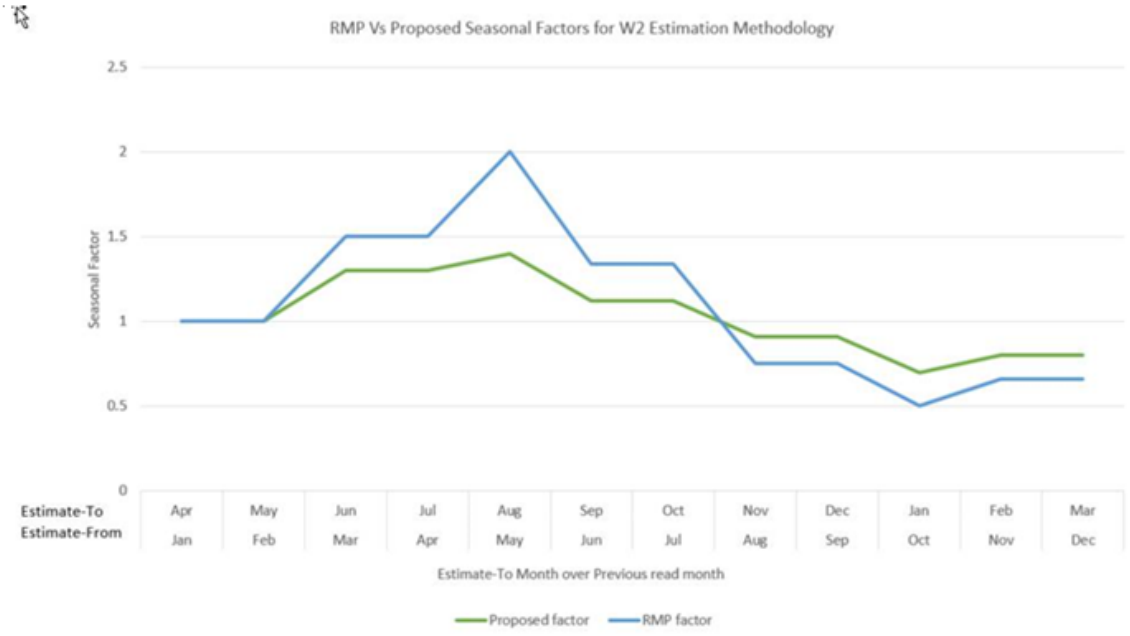


Table 1 - Month-by-Month Comparison of Proposed and Current Seasonality Factors

Estimate - From month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Estimate - To Month	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
RMP factor	1	1	1.5	1.5	2	1.34	1.34	0.75	0.75	0.5	0.66	0.66
Proposed factor	1	1	1.3	1.3	1.4	1.12	1.12	0.91	0.91	0.7	0.8	0.8

Impact on Network Charges

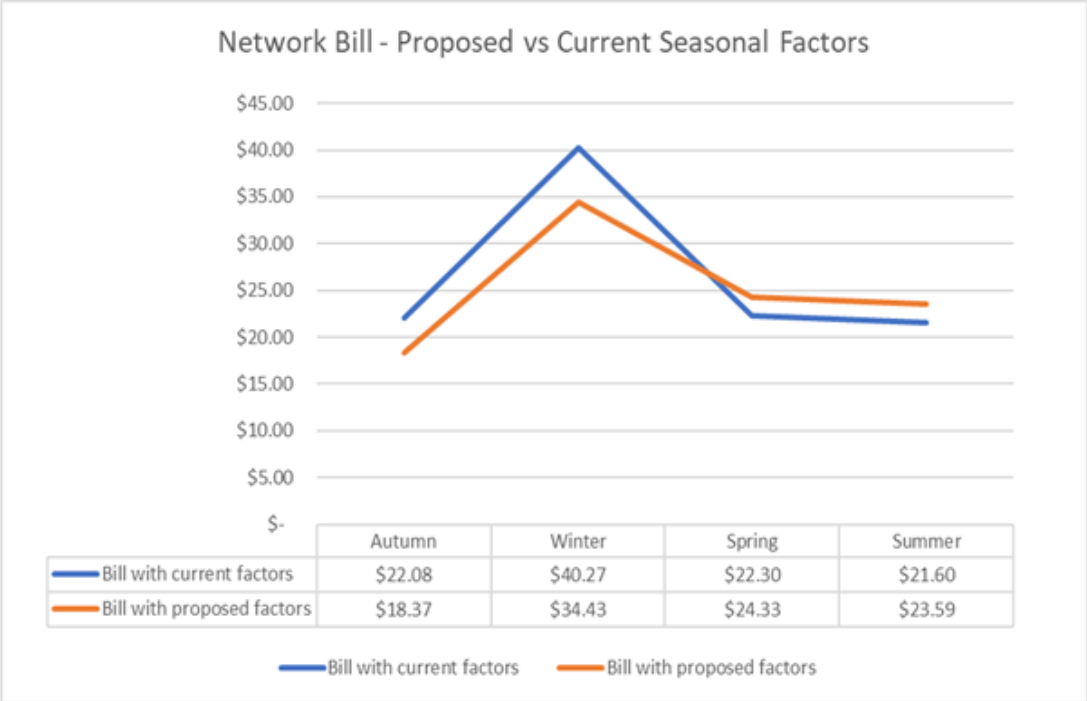
As shown below in Graphs 2 and 3, the proposed seasonality factors are expected to have a positive impact on the network charges for consumers via the consumption component of the network bill (excluding fixed charges).

Graph 2 Assumptions/basis for calculation:

- Winter/Summer is same customer, Autumn/ Spring is different customer
- JGN Coastal first block tariff of $21.920/GJ applied
- Fixed Charge of $0.14024384/day applied

Estimated Energy	Autumn	Winter	Spring	Summer
With current factors	425 MJ	1,249 MJ	435 MJ	403 MJ
With proposed factors	256 MJ	969 MJ	528 MJ	481 MJ

Graph 2 – Network Bill Comparison of Proposed and Current Seasonality Factors



When totaling the quarterly amounts over the year in Graph 2, the annual bill for the proposed factors is $100.72 compared to $106.25 for the current factors. Therefore, in this example the proposed changes will result in saving of $5.53, or 5.49% of network charges.

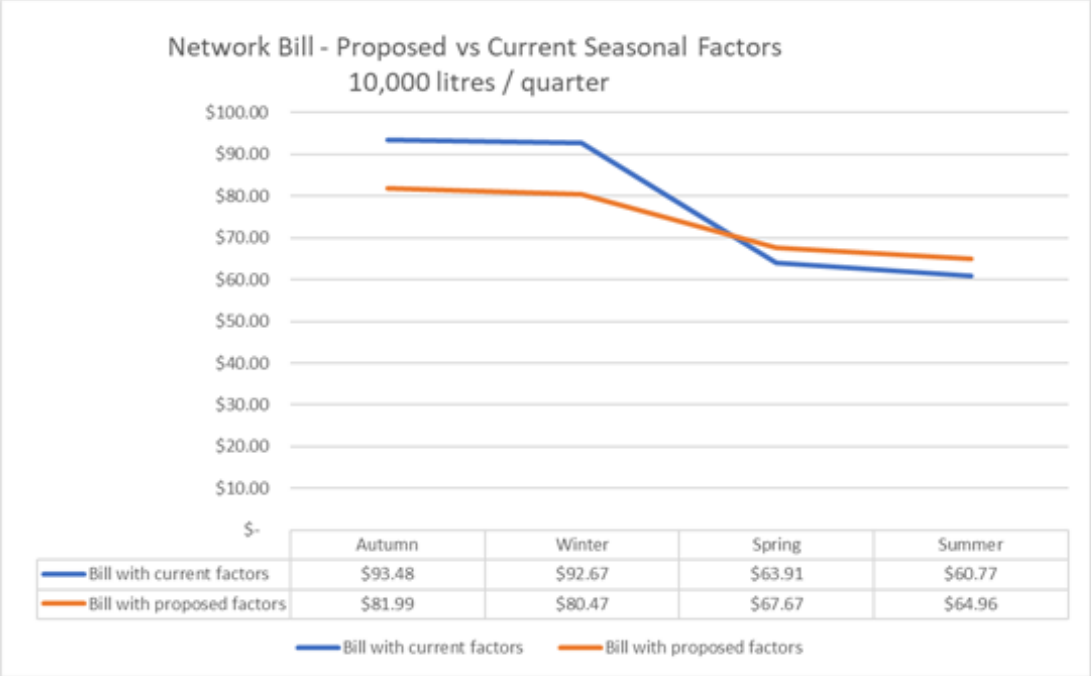
From an energy perspective, the comparison is 2512 MJ versus 2234 MJ. The reduction of 278MJ would at a retail rate of $30/GJ translate to a reduction of $8.34 for the consumer.

Graph 3 Assumptions/basis for calculation:

- Baseline actual reads hot water consumption of 10000 litres per quarter
- Invoicing cycle: March, June, September, December
- JGN Coastal first block tariff of $21.920/GJ applied to first 1890 MJ
- JGN Coastal second block tariff of $7.185/GJ applied to next 1860 MJ
- JGN Coastal third block tariff of $6.807/GJ applied to next 4500 MJ
- Fixed Charge of $0.14024384/day applied

Estimated Energy	Autumn	Winter	Spring	Summer
With current factors	7,558 MJ	7,419 MJ	3,243 MJ	2,805 MJ
With proposed factors	5,870 MJ	5,585 MJ	3,766 MJ	3,350 MJ

Graph 3 – Network Bill Comparison of Proposed and Current Seasonality Factors



When totaling the quarterly amounts over the year in Graph 3, the annual bill for the proposed factors is $295.08 compared to $310.83 for the current factors. Therefore, in this example the proposed changes will result in saving of $15.75 or 5.07% in network charges.

From an energy perspective, the comparison is 21,026 MJ versus 18,571 MJ. The reduction of 2,455 MJ would at a retail rate of $30/GJ translate to a reduction of $73.65 for the consumer.

ATTACHMENT C – Jemena's Seasonal Factor Analysis Approach
(This information supplied by Jemena)

Jemena's Seasonal Factor Analysis Approach

Jemena's analysis of actual water meter reading data has identified an opportunity to update Method W2 seasonality factors and improve estimation accuracy to bring it closer to actuals, minimising any potential billing issues.

Jemena took the following approach in analysing the seasonal factors to review the historical pre-B2B factors:

- The water meter reading and consumption data was based on actual meter read data for approx. 3,500 master water meters, covering around 108,000 sub-meters, for the period January 2017 to March 2018. This covers a significant installation population, for statistical validity.
- Consumption data in litres was separated into calendar months and assigned to one of the four seasons based on the consumption period (more than half of the period are in one of the seasons).
- The trend of consumption movement was reviewed between different seasons for quarter to quarter and monthly averages of the consumption variance.
- Values were compared to the seasonal factors defined in the current Retail Market Procedures to understand the impact and comparison was made of estimations calculated from new factors with actuals to evaluate the accuracy.
- Jemena's finding is that with the revised seasonality factors, the estimation of hot water consumption for W2 methodology will be more accurate, and better reflects on average, seasonal usage behaviours.

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ATTACHMENT D – Master water meter consumption data
(This information supplied by Jemena)

Seasonal Factor Data to market.xlsx

ATTACHMENT E – SUBMISSIONS RECEIVED FOR CHANGE IN007-18

SUBMISSIONS RELATING TO THE PPC				
General Comments on the PPC				
Sections 1 to 10 of the PPC sets out details of the proposal. Does your organisation support Jemena' s assessment of the proposal? If no, please specify areas in which your organisation disputes Jemena's assessment (include PPC section reference number) of the proposal and include information that supports your organisation rational why you do not support Jemena's assessment				
	Date	**Participant**	**Response received**	**AEMO / Jemena Comment**
1	1 Oct 2018	AGL	AGL believes that Jemena's assessment of the outcome is correct, in that customer bills may be less volatile through the proposed changes. That's doesn't mean that the customers' bills are more accurate. AGL analysis of the data provided by Jemena gas indicates that while winter usage will be decreased, the summer usage will be increased (AGL modelling suggests that this could be up as high as 62%). This could lead to bill shock events during this period. While this may help the end user, this could also create issues for retailers as customers churn. AGL would like to see a review of these factors take place 16 months after implementation (to ensure a complete year 's worth of data is available for analysis) to determine if the change is beneficial or causing problems.	AEMO notes AGL agrees with Jemena's assessment of the outcome and AGLs decision not to oppose the implementation of this change. In relation AGL proposal to review these factors in 16 months, AEMO has spoken to Jemena and the outcome of this discussion is Jemena believes that 24 months to complete a review is more appropriate as it will provide Jemena with more data to analyse the effectiveness of the new seasonality factors. Jemena has indicated that they would endeavour to complete this review within the first 24 months.
2	1 Oct 2018	Origin	Origin supports the proposal to amend the HW Estimation Methodology	AEMO acknowledges Origins support
3	1 Oct 2018	Jemena	As the proponent for this RMP change, Jemena Gas Networks (JGN) supports the proposed amendments for the following reasons: • The proposed changes to the seasonality factors for Method W2 are expected to result in more accurate	AEMO notes Jemena's support and comment that the proposed system and process changes are deemed to be non-material.

SUBMISSIONS RELATING TO THE PPC					
			meter reads, leading to less estimation and substitution volatility for consumers. • The impact for market participants is non-material are there is not expected to be any system and process changes for Retailers or AEMO. • For JGN, the proposed system and process changes are deemed to be non-material and can be implemented within a short timeframe.		
Specific comments regarding RMPs and GIP/SP					
#	**Date**	**Participant**	**Issue / Comment**		**AEMO Comment**