19 November 2018

Notice to all Registered Participants under the National Gas Rules (NGR).

This notice is to advise Participants on AEMO's decision to approve amendments to the:

- New South Wales and Australian Capital Territory (NSW/ACT) Retail Market Procedures (RMP).

This notice advises Gas Market Registered Participants that consultation under the ordinary Procedure change consultative process prescribed under Rule 135EE of the **NGR** concluded on 2 November 2018 for:

- **IN007/18 (Proposal to amend the Hot Water Estimation and Substitution Methodology as described in the NSW/ACT Retail Market Procedure (RMP).**

As required under Rule 135EE of the NGR, Gas Market Registered Participants and other interested parties were invited to submit comments to AEMO on the Impact and Implementation Report (IIR).

Having considered each proposal, AEMO has approved the proposed amendments attached to this notice and has set the effective date for the changes to be **14 December 2018**.

Updated versions of the RMPs pertaining to the changes described in Attachments A will be published on the AEMO website prior to the effective date.

Should you require any further information please contact Danny McGowan on (03) 9609 8447.

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*)

$Li\_est = min \left((\Sigma Lj\_validated / Nvalidated), ((LHW\_master - \Sigma Lj\_validated) / Nest) \right)$

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*
$= \Sigma Lj\_validated / Nvalidated$.

(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.

(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.