



Draft

Rate of return guidelines

July 2018

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Rate of return guidelines

1. Italicised expressions in these Guidelines are defined in the glossary in clause 25.
2. These rate of return Guidelines are made under the National Electricity Law and National Gas Law and may be amended from time to time in accordance with the National Electricity Law and National Gas Law.

Allowed rate of return

3. The allowed rate of return must be calculated as follows:

$$\text{allowed rate of return}_t = k^e(1 - G) + k_t^d G$$

Where:

- (a) *allowed rate of return*_t is the allowed rate of return in **regulatory year t**
- (b) k^e is the allowed return on equity for the **regulatory control period** and must be calculated in accordance with clause 4
- (c) k_t^d is the allowed return on debt for the **regulatory year t**, and must be calculated in accordance with clause 8
- (d) G is the proportion of debt in total financing, otherwise referred to as the gearing ratio, and is set at a value of 0.6.

Return on equity

4. The allowed return on equity for the **regulatory control period** must be calculated as follows:

$$k^e = k^f + \beta \times MRP$$

Where:

- (a) k^f is the risk free rate of return expressed as a percentage and must be calculated in accordance with clause 5
- (b) β is the allowed equity beta, and is set to a value of 0.6
- (c) MRP is the allowed market risk premium, and is set to a value of 6 per cent.

Risk free rate of return

5. The risk free rate of return must be calculated as follows:

$$k^f = \frac{1}{n} \sum_{x=0}^{n-1} \left(\left(1 + \frac{y_a + \frac{(y_b - y_a) * ((t + x) + 10 \text{ years} - m_a)}{m_b - m_a}}{200} \right)^2 - 1 \right) * 100$$

Where:

- (a) k^f is the risk free rate expressed as a percentage

- (b) t is the starting date of the **risk free rate averaging period** determined in accordance with clause 6
- (c) x is the number of **business days** from the start of the **risk free rate averaging period**
- Note 1: $(t + x)$ represents the date, x number of business days after t . For example, if t is 6/3/2017 and x is 1, then $(t + x) = 7/3/2017$.
- Note 2: $(t + x) + 10$ years represents the date, 10 years after $(t + x)$. For example, if $(t + x) = 7/3/2017$, then $(t + x) + 10$ years = 7/3/2027.
- (d) n is the length of the **risk free rate averaging period** measured in **business days**
- (e) y_a is the yield on bond a, taken from data sources in accordance with clause 22
- (f) y_b is the yield on bond b, taken from data sources in accordance with clause 22
- (g) m_a is the maturity of bond a
- (h) m_b is the maturity of bond b
- (i) bond a is a CGS with the maturity m_a , where:
- $m_a = \max(m) \in D$
 - D is the set of all bonds with $m \leq t + 10$ years
- (j) bond b is a CGS with the maturity m_b , where:
- $m_b = \min(m) \in E$
 - E is the set of all bonds with $m \geq t + 10$ years.
- (k) $\left(\left(1 + \frac{y_a + \frac{(y_b - y_a) * ((t+x) + 10 \text{ years} - m_a)}{m_b - m_a}}{200} \right)^2 - 1 \right) * 100$ represents the 10-year CGS yield estimate for day $(t + x)$ expressed as a percentage.

Note 3: For example, the 10-year CGS yield for $(t + x) = 7/3/2017$ is as follows:

- if $(t + x) = 7/3/2017$ then $(t + x) + 10$ years = 7/3/2027; and
- if on 7/3/2017, y_a is 2.770 for $m_a = 21/4/2026$ and y_b is 2.820 for $m_b = 21/4/2027$; then
- $y_a + \frac{(y_b - y_a) * ((t+x) + 10 \text{ years} - m_a)}{m_b - m_a} = 2.770 + \frac{(0.050) * (7/3/2027 - 21/4/2026)}{21/4/2027 - 21/4/2026} = 2.814$; thus
- $\left(\left(1 + \frac{y_a + \frac{(y_b - y_a) * ((t+x) + 10 \text{ years} - m_a)}{m_b - m_a}}{200} \right)^2 - 1 \right) * 100 = 2.834$

The examples provided in clause 5 are purely for illustrative purposes.

Risk free rate averaging period

6. The **risk free rate averaging period** refers to:

- (a) the period nominated by a **service provider** in the **regulatory proposal** to which these Guidelines are being applied and which satisfies the conditions set out in clause 7, or
- (b) if no period is nominated in accordance with clause 6(a), a period of 20 consecutive **business days** in length that finishes **3 months** before the start of the **regulatory control period** to which these Guidelines are being applied.
7. A **risk free rate averaging period** nominated in accordance with clause 6(a) must:
- (a) constitute a period of consecutive **business days** that is a least 20 **business days** and no more than 60 **business days**
- (b) start no earlier than 7 **months** before the commencement of the **regulatory control period**
- (c) finish no later than 3 **months** before the commencement of the **regulatory control period**, and
- (d) be nominated prior to the start of the averaging period and contained in the **initial proposal** by the **service provider**.

Return on debt trailing average portfolio calculation

8. The allowed return on debt for **regulatory year** t must be calculated as follows:

$$\text{If } s \geq t - 9; k_t^d = \frac{10 - (t - s)}{10} R_s + \frac{1}{10} \sum_{n=s+1}^t R_n \quad (10 \text{ year transition period})$$

$$\text{If } s < t - 9; k_t^d = \frac{1}{10} \sum_{n=t-9}^t R_n \quad (\text{trailing average})$$

Where:

- (a) k_t^d refers to the allowed return on debt for **regulatory year** t expressed as a percentage, and once finalised, must not be updated. k_t^d must be deemed to have been finalised on the earlier of:
- i. when the AER notifies the **service provider** of the annual estimate, or
 - ii. four weeks after the end of the **service provider's** annual averaging period, calculated in accordance with clause 17.
- (b) t refers to the **regulatory year** for which the allowed return on debt is being calculated
- (c) s refers to the first year of the **transition period**
- (d) R_s refers to the on-the-day rate of return on debt in year s , and must be calculated in accordance with clause 9
- (e) n refers to a series of years

- (f) R_n refers to the on-the-day rate of return on debt in any year in the series n , and must be calculated in accordance with clause 9
- (g) $k_t^d = \frac{10-(t-s)}{10} R_s + \frac{1}{10} \sum_{n=s+1}^t R_n$ refers to the calculation of the allowed return on debt in **regulatory year** t during the **transition period**.

Note 4: For example, if for a particular service provider, s is 2016 (ie, the first regulatory year of the transition period for that service provider):

- and if t is 2016 (ie, the first regulatory year of the transition period), then

$$k_{2016}^d = \frac{10-(2016-2016)}{10} R_{2016} \text{ as } s \geq t - 9 \text{ ie, } 2016 \geq 2007, \text{ thus}$$

$$k_{2016}^d = R_{2016}$$

- and if t is 2017, then

$$k_{2017}^d = \frac{10-(2017-2016)}{10} R_{2016} + \frac{1}{10} \sum_{n=2017}^{2017} R_n \text{ as } s \geq t - 9 \text{ ie, } 2016 \geq 2008, \text{ thus}$$

$$k_{2017}^d = 0.9 R_{2016} + 0.1 R_{2017}$$

- and if t is 2025 (ie, the 10th regulatory year of the transition period), then

$$k_{2025}^d = \frac{10-(2025-2016)}{10} R_{2016} + \frac{1}{10} \sum_{n=2017}^{2025} R_n \text{ as } s \geq t - 9 \text{ ie, } 2016 \geq 2016, \text{ thus}$$

$$k_{2025}^d = 0.1 R_{2016} + 0.1 R_{2017} + 0.1 R_{2018} + 0.1 R_{2019} + 0.1 R_{2020} + 0.1 R_{2021} + 0.1 R_{2022} + 0.1 R_{2023} + 0.1 R_{2024} + 0.1 R_{2025}$$

- (h) $k_t^d = \frac{1}{10} \sum_{n=t-9}^t R_n$ refers to the calculation of the allowed return on debt in **regulatory year** t using a trailing average portfolio approach, upon the completion of the transition period in clause 8(g).

Note 5: For example, if for a particular service provider, s is 2016 (ie, the first regulatory year of the transition period):

- And if t is 2026 (ie, the 11th regulatory year), then

$$k_{2026}^d = \frac{1}{10} \sum_{n=2017}^{2026} R_n \text{ as } s < t - 9 \text{ ie, } 2016 < 2017, \text{ thus}$$

$$k_{2026}^d = 0.1 R_{2017} + 0.1 R_{2018} + 0.1 R_{2019} + 0.1 R_{2020} + 0.1 R_{2021} + 0.1 R_{2022} + 0.1 R_{2023} + 0.1 R_{2024} + 0.1 R_{2025} + 0.1 R_{2026}.$$

On-the-day return on debt calculation

9. The on-the-day rate of return on debt for year n must be calculated as follows:

$$\text{If } n \geq 17/12/2018; R_n = \frac{\sum_{\text{1st day of averaging period for year } n}^{\text{end of averaging period for year } n} \text{Yield}_n^i}{\text{number of days in averaging period in year } n}$$

$$\text{If } n < 17/12/2018; R_n = RoD_n$$

Where:

- (a) R_n refers to the on-the-day rate of return on debt for year n expressed as a percentage

Note 6: Clause 9 also applies to the calculation of R_s (ie, replace 'n' with 's').

- (b) $Yield_n^i$ is the daily yield estimate for day i within the **return on debt averaging period** for year n and must be calculated in accordance with clause 10.
- (c) $\sum_{1st\ day\ of\ averaging\ period\ for\ year\ n}^{end\ of\ averaging\ period\ for\ year\ n} Yield_n^i$ refers to the sum of $Yield_n^i$ over the **return on debt averaging period**, where the **return on debt averaging period** must be determined in accordance with clause 17.

Note 7: For the avoidance of doubt, for the calculation of R_n , where the on-the-day rate of return on debt for year n is to be calculated on or after 17/12/2018, the "1st day of averaging period for year n" and the "end of averaging period for year n" may be on or before 17/12/2018 as long as it complies with clause 17.

- (d) RoD_n refers to the rate of return on debt for year n previously determined by the AER and deemed finalised in accordance with clause 8(a), which is specific to the **service provider**, if the **service provider** has already commenced the **transition period** under the 2013 Rate of Return Guideline.

Note 8: 'day' refers to **business day**.

10. Subject to the contingencies in clause 19, the daily yield estimates over the **return on debt averaging period** for year n must be calculated as an average of each **curve provider's** daily yield estimates as follows:

$$Yield_n^i = \frac{\left(\frac{1}{3}BVALA_n^i + \frac{2}{3}BVALB_n^i\right) + \left(\frac{1}{3}RBAA_n^i + \frac{2}{3}RBAB_n^i\right) + \left(\frac{1}{3}TRA_n^i + \frac{2}{3}TRB_n^i\right)}{Curves_n^i}$$

Where:

- (a) $Yield_n^i$ is the daily yield estimate for day i within the **return on debt averaging period** for year n
- (b) $BVALA_n^i$ is the $Yield_{EAR}$ for the Bloomberg broad A-rated curve for day i within the **return on debt averaging period** in year n and must be calculated in accordance with clause 11
- (c) $BVALB_n^i$ is the $Yield_{EAR}$ for the Bloomberg broad BBB-rated curve for day i within the **return on debt averaging period** in year n and must be calculated in accordance with clause 11
- (d) $RBAA_n^i$ is the $Yield_{EAR}$ for the RBA broad A-rated curve for day i within the **return on debt averaging period** in year n and must be calculated in accordance with clause 11
- (e) $RBAB_n^i$ is the $Yield_{EAR}$ for the RBA broad BBB-rated curve for day i within the **return on debt averaging period** in year n and must be calculated in accordance with clause 11
- (f) TRA_n^i is the $Yield_{EAR}$ for the Thomson Reuters broad A-rated curve for day i within the **return on debt averaging period** in year n and must be calculated in accordance with clause 11

- (g) TRB_n^i is the $Yield_{EAR}$ for the Thomson Reuters broad BBB-rated curve for day i within the **return on debt averaging period** in year n and must be calculated in accordance with clause 11
- (e) $Curves_n^i$ is the number of **curve providers** used for day i within the **return on debt averaging period** in year n .

Note 9: For example, if all yield estimates from all three **curve providers** are used (ie $BVALA_n^i$, $BVALB_n^i$, $RBAA_n^i$, $RBAB_n^i$, TRA_n^i and TRB_n^i) on day i within the **return on debt averaging period** in year n , then $Curves_n^i$ is 3.

Conversion to effective annual rates

11. Subject to the contingencies in clause 19, all daily Bloomberg, RBA and Thomson Reuters 10-year yield estimates, if published as a decimal (eg, 5 per cent is expressed as 0.05), must be converted into effective annual rates as follows:

$$Yield_{EAR} = \left(\left(1 + \frac{Yield_{10}}{2} \right)^2 - 1 \right) * 100$$

Where:

- (a) $Yield_{EAR}$ refers to the daily 10-year yield estimate converted into an effective annual rate
- (b) Data for yield estimates from each of the **curve providers** must be sourced in accordance with clause 23.
- (c) $Yield_{10}$ refers to the 10-year daily rates from each of the **curve providers** and must be calculated in accordance with clause 12 to extrapolate yield estimates to an exact term of 10 years if required, and clause 13, clause 14, clause 15 and clause 16 to interpolate yield estimates to daily rates if required.

Note 10: Bloomberg and Thomson Reuters currently publishes daily 10-year yield estimates, and so extrapolation and interpolation is not required. However, extrapolation may be required for these estimates, in the event that the term of their yield estimates is not exactly 10 years (this is set out in the contingencies in clause 19). The RBA currently publishes 10-year broad A-rated and broad BBB-rated yield estimates that have an effective term of less than 10 years and so extrapolation is currently required to extend their term to exactly 10 years in accordance with clause 12. The RBA also publishes its 10-year yield estimates for one day at the end of each month, and so interpolation is required to obtain daily estimates in accordance with clause 13, clause 14, clause 15 and clause 16.

- (d) If daily yields are published as a percentage (eg 5 per cent is expressed as 5), the 10-year yield estimates must be converted into effective annual rates as follows:

$$Yield_{EAR} = \left(\left(1 + \frac{Yield_{10}}{200} \right)^2 - 1 \right) * 100$$

Linear extrapolation

12. If extrapolation is necessary to obtain an exact 10-year term yield estimate, the extrapolated rate from a broad credit rating band (band Y) on a specific day (date Z) must be calculated as follows:

$$Yield_{10} = Yield_{later} + (10 - Term_{later}) \frac{(Spread\ to\ swap_{later} - Spread\ to\ swap_{earlier})}{(Term\ of\ Sts_{later} - Term\ of\ Sts_{earlier})}$$

Where:

- (a) $Yield_{10}$ refers to the 10-year extrapolated rate
- (b) $Yield_{later}$ refers to the un-extrapolated yield for the longest published term for credit rating band Y on day Z
- (c) $Spread\ to\ swap_{later}$ refers to the spread to swap rate for the longest published term for credit rating band Y on day Z
- (d) $Spread\ to\ swap_{earlier}$ refers to the spread to swap rate for the second longest published term for credit rating band Y on day Z
- (e) $Term_{later}$ refers to the effective term for $Yield_{later}$
- (f) $Term\ of\ Sts_{later}$ refers to the effective term for $Spread\ to\ swap_{later}$
- (g) $Term\ of\ Sts_{earlier}$ refers to the effective term for $Spread\ to\ swap_{earlier}$
- (h) Data for the spread to swap rates must be sourced in accordance with clause 24.

Note 11: In accordance with the contingency in clause 19(a), if Bloomberg or Thomson Reuter's daily yield estimates must be extrapolated to an exact 10-year term, $Term_{later}$ in clause 12 must refer to the longest published term for credit rating band Y on day Z; also $Spread\ to\ swap_{later}$ must be replaced with " $Spread\ to\ CGS_{later}$ ", and $Spread\ to\ swap_{earlier}$ with " $Spread\ to\ CGS_{earlier}$ ", and $Yield_{later}$ with $CGS_{10-year}$ where:

- i. $Spread\ to\ CGS_{later}$ refers to the spread to CGS rate for the longest published term for credit rating band Y on day Z, where the CGS rate has been calculated in accordance with clause 13 for a target term equal to the longest published term for credit rating band Y on day Z.
- ii. $Spread\ to\ CGS_{earlier}$ refers to the spread to CGS rate for the second longest published term for credit rating band Y on day Z, where the CGS rate has been calculated in accordance with clause 13 for a target term equal to the second longest published term for credit rating band Y on day Z
- iii. $CGS_{10-year}$ refers to the 10-year CGS rate on day Z calculated in accordance with clause 13.

Linear interpolation

Calculation of daily Commonwealth Government Security yields

13. Where interpolation is necessary to estimate a daily CGS yield estimate for a target term, the interpolated rate must be calculated as follows:

$$CGS_{interpolated} = CGS_{lower} + (Date_{target} - Date_{lower}) \frac{(CGS_{upper} - CGS_{lower})}{(Date_{upper} - Date_{lower})}$$

Where:

- (a) $CGS_{interpolated}$ refers to the daily CGS yield estimates for a target term
- (b) $Date_{target}$ refers to the target maturity date.
Note 12: If interpolation is required to calculate a 10-year CGS yield estimate for date x, $Date_{target}$ will be date x + 10 years eg, if a 10-year CGS yield estimate is required for 20/6/2018, then $Date_{target}$ is 20/6/2028.
- (c) CGS_{lower} refers to the daily CGS yield from the lower straddling bond, which is the CGS with the closest maturity prior to $Date_{target}$
- (d) CGS_{upper} refers to the daily CGS yield from the upper straddling bond, which is the CGS with the closest maturity higher than $Date_{target}$
- (e) $Date_{lower}$ refers to the maturity date of CGS_{lower}
- (f) $Date_{upper}$ refers to the maturity date of CGS_{upper}
- (g) Data for the daily CGS yield estimates must be sourced in accordance with clause 22.

Calculation of month-end RBA spreads

14. Where interpolation is necessary to determine a daily RBA spread estimate, the month-end RBA yield estimate (extrapolated to an exact term of 10 years in accordance with clause 12) must first be converted into a spread to CGS as follows:

$$Spread_{month-end} = Yield_{month-end} - CGS_{month-end}$$

Where:

- (a) $Spread_{month-end}$ refers to the spread to CGS for the RBA series at a particular month-end publication date
- (b) $Yield_{month-end}$ refers to the $Yield_{10}$ estimate for the RBA curve on the same date as 14(a) above and is calculated in accordance with clause 12
- (c) $CGS_{month-end}$ refers to $CGS_{interpolated}$ for a 10-year target term on the same date as 14(a) above and is calculated in accordance with clause 13.

Note 13: In accordance with the contingency in clause 19(g), if Thomson Reuters or Bloomberg commences publishing yield estimates of a different frequency (eg, monthly or weekly), then interpolation is necessary to obtain daily yield estimates; and so in clause 14 “RBA” must be replaced with either “Thomson Reuters” or

“Bloomberg” according to the yield estimates that require interpolation; and “month-end” must be replaced by the new updated frequency of when the yield estimates are published, if necessary (eg, if the frequency becomes monthly, no change is required, but if it becomes weekly, then replace “month-end” with “week-end”).

Calculation of daily RBA spreads

15. Where interpolation is necessary to calculate a daily RBA spread to CGS, the interpolated rate must be calculated as follows:

$$\begin{aligned}
 & Spread_{interpolated} \\
 &= Spread_{beginning} + (Date_{interpolation} \\
 &\quad - Date_{beginning}) \frac{(Spread_{end} - Spread_{beginning})}{(Date_{end} - Date_{beginning})}
 \end{aligned}$$

Where:

- (a) $Spread_{interpolated}$ refers to the daily interpolated RBA spread to CGS
- (b) $Spread_{beginning}$ is the $Spread_{month-end}$ for the last RBA month-end estimate preceding the interpolation date
- (c) $Spread_{end}$ is the $Spread_{month-end}$ for the next RBA month-end estimate after the interpolation date
- (d) $Date_{interpolation}$ is the date for which an estimate is being interpolated
- (e) $Date_{beginning}$ is the date of the last RBA month-end estimate preceding the interpolation date.
- (f) $Date_{end}$ is the date of the next RBA month-end estimate following the interpolation date.

Note 14: The RBA’s month-end estimates must be assigned to the last business day of each relevant month.

Note 15: If the annual return on debt estimate must be finalised before a final published RBA month-end estimate is available, the last observed RBA spread to CGS must be held constant to the end of the return on debt averaging period which has been determined in accordance with clause 17.

Note 16: In accordance with the contingency in clause 19(g), if Thomson Reuters or Bloomberg commences publishing yield estimates of a different frequency (eg, monthly or weekly), then interpolation is necessary to obtain daily yield estimates; and so in clause 15 “RBA” must be replaced with either “Thomson Reuters” or “Bloomberg” according to the yield estimates that require interpolation; and “month-end” must be replaced by the new updated frequency of when the yield estimates are published, if necessary (eg, if the frequency becomes monthly, no change is required, but if it becomes weekly, then replace “month-end” with “week-end”).

Calculation of the daily 10-year RBA yields

16. To produce a daily 10-year RBA yield series, the daily 10-year CGS yields calculated in accordance with clause 13, and the daily 10-year RBA spread to CGS yields calculated in accordance with clause 15, must be combined as follows:

$$Yield_{10} = Spread_{interpolated} + CGS_{interpolated}$$

Where:

- (a) $Yield_{10}$ refers to the daily 10-year extrapolated RBA yield
- (b) $Spread_{interpolated}$ refers to the daily interpolated RBA spread to CGS
- (c) $CGS_{interpolated}$ refers to the daily 10-year CGS yield.

Note 17: In accordance with the contingency in clause 19(g), if Thomson Reuters or Bloomberg commences publishing yield estimates of a different frequency (eg, monthly or weekly), then interpolation is necessary to obtain daily yield estimates; and so in clause 16 “RBA” must be replaced with either “Thomson Reuters” or “Bloomberg” depending on the yield estimates that require interpolation.

Return on debt averaging periods

17. The **return on debt averaging period** must be kept confidential¹ and refers to:

- (a) the period nominated by a **service provider** in the **regulatory proposal** to which these Guidelines are being applied and which satisfies the conditions set out in clause 18, or
- (b) if no period is nominated in accordance with clause 17(a), then the **regulatory proposal** will be deemed as being non-compliant and must be re-submitted.

18. A **return on debt averaging period** nominated in accordance with clause 17(a) must:

- (a) finish no earlier than 12 **months** prior to the commencement of a **regulatory year**
- (b) finish no later than 3 **months** prior to the commencement of a **regulatory year**
- (c) be observed over a period of 10 or more consecutive **business days**, up to a maximum of 12 **months**
- (d) be specified prior to the commencement of the **regulatory control period**
- (e) at the time it is nominated, take place in the future
- (f) be specified for each **regulatory year** within the **regulatory control period**, and
- (g) not overlap for each different **regulatory year**, although the averaging period is not required to be identical for each **regulatory year**.

Note 18: For the avoidance of doubt, the return on debt must be updated annually using the averaging period nominated for each regulatory year.

Note 19: If the start date of any averaging period, nominated in accordance with clause 18 does not fall on a business day, then the start date of the averaging

¹ A service provider may nominate its return on debt averaging period in a confidential appendix as part of its regulatory proposal.

period must be deemed to be the next business day. If the end date of any averaging period, nominated in accordance with clause 18 does not fall on a business day, then the end date of the averaging period must be deemed to be the previous business day. This is so that clause 18(a) and clause 18(b) can be satisfied. However, if the result is such that clause 18(c) is not satisfied ie, it results in an averaging period of less than 10 business days, then clause 17(b) must apply.

Return on debt contingencies

19. The following contingencies must apply to all the yield estimates for all **curve providers** in clause 10.

- (a) If a **curve provider** on day i publishes either a broad A-rated or broad BBB-rated yield estimate with a maximum published term less than 10 years, but greater than or equal to 7 years, then the yield estimate for day i must be linearly extrapolated to an exact term of 10 years in accordance with clause 12.

Note 20: For the avoidance of doubt, clause 19(a) also applies to all contingencies in clause 19, if it is necessary to extrapolate any yield estimates to an exact term of 10 years.

- (b) If a **curve provider** on day i does not publish both a broad A-rated and broad BBB-rated yield estimate with term greater than or equal to 7 years but less than or equal to an exact term of 10 years, then $Yield_n^i$ for day i in clause 10, must be calculated using the data from the remaining curve providers, subject to clause 19(c).

Note 21: For the avoidance of doubt, equal weightings must be adopted for the remaining curve providers that are used to calculate $Yield_n^i$ for day i in clause 10. For example, if in accordance with clause 19(b), yield estimates are only available from two curve providers for day i , they will each have 50% weighting.

- (c) If all **curve providers** on day i do not publish both a broad A-rated and a broad BBB-rated yield estimate with term greater than or equal to 7 years but less than or equal to an exact term of 10 years, then
- i. a simple average of the spread to 10-year CGS over the preceding 100 **business days** for each broad A-rated and BBB-rated curve, must be calculated for all **curve providers** where data is available, and must be added to
 - ii. the daily 10-year CGS yield estimates, to determine each **curve providers'** broad A-rated and broad BBB-rated yield estimates to calculate $Yield_n^i$ for day i in clause 10.

Note 22: For the avoidance of doubt, when calculating the average spread to 10-year CGS over the preceding 100 business days, all available daily yield estimates, for all curve providers must be used, as long as they have not been previously excluded to calculate $Yield_n^i$ due to clause 19(b).

Note 23: The daily 10-year CGS yield estimates must be calculated in accordance with clause 13.

- (d) If any **curve provider** substitutes its current methodology for a revised or updated methodology, then the revised or updated methodology must be used to calculate $Yield_n^i$ for day i in clause 10 as long as the yield estimates are obtained from the same data sources identified in clause 22, clause 23 and clause 24.

Note 24: For the avoidance of doubt, if a curve provider ceases publication of its existing curves in the data sources identified in clause 22, clause 23 and clause 24, and replaces them with new curve products, then the curve provider must be deemed to have 'not published on day i both a broad A-rated and broad BBB-rated yield estimate with term greater than or equal to 7 years but less than or equal to an exact term of 10 years', and so the contingencies in clause 19(b) or clause 19(c) must apply. The new curve products must not be used to calculate $Yield_n^i$ for day i in clause 10.

- (e) If any **curve provider** revises or updates its historical yield estimates, the revised or updated historical yield estimates must not be used to recalculate the allowed return on debt that has been finalised for any **regulatory year** in accordance with clause 8.
- (f) If the RBA replaces its publication with daily yield estimates, then linear interpolation is no longer required to obtain daily yield estimates, and so the newly published daily yield estimates must be used to calculate $Yield_n^i$ for day i in clause 10, and must be extrapolated to an exact term of 10 years if necessary, in accordance with clause 12.
- (g) If either Thomson Reuters or Bloomberg replaces their publication with a different frequency (eg, monthly yield estimates instead of daily yield estimates), then the new yield estimates must be converted into daily yield estimates in accordance with clause 14, clause 15 and clause 16.

Value of imputation credits

20. The value of imputation credits is set at a value of 0.5.

Rounding rules

21. With the exception of the allowed equity beta (β), the allowed market risk premium (MRP), the gearing ratio and the value of imputation credits, all calculations made pursuant to these Guidelines must be done in Microsoft Excel or a software program that undertakes equivalent calculations, and must be unrounded.

Data sources

22. Data for calculating daily 10-year CGS yields must be sourced from the RBA's published statistical data, "Indicative Mid Rates of Australian Government Securities – F16". In the event that the RBA stops publishing daily data on the CGS yields, the data must be sourced from Bloomberg's ADSWAP10 index. In the event that Bloomberg does not publish the ADSWAP10 index, a historical 100 **business day** simple average of CGS yields must be calculated and kept constant until published CGS yield data becomes available.

23. Each **curve provider's** yield estimates must be obtained from the following data sources:
- (a) RBA's broad A-rated and broad BBB-rated yield estimates must be sourced from the RBA's published statistical data, "Aggregate Measures of Australian Corporate Bond Spreads and Yields – F3".
 - (b) Bloomberg broad A-rated yield estimates must be obtained from its BVCSAE index, and its broad BBB-rated yield estimates from its BVCSAB index.
 - (c) Thomson Reuters broad A-rated yield estimates must be obtained from its AAUDBMK index, and its broad BBB-rated yield estimates from its BBBAUDBMK index.
24. Data for the spread to swap rates must be obtained from the RBA's published statistical data, "Aggregate Measures of Australian Corporate Bond Spreads and Yields – F3".

Glossary

25. The following terms are defined as follows:
- (a) **Access arrangement period** has the meaning given to it in the National Gas Law and National Gas Rules.
 - (b) **Allowed rate of return** refers to the rate of return calculated in accordance with clause 3, and is a nominal vanilla rate of return that is consistent with the value of imputation credits and does not include transaction costs associated with raising capital.
 - (c) **Business day/s** refers to a date on which the Reserve Bank of Australia (RBA) publishes Commonwealth Government Security (CGS) mid-rates.
 - (d) **CGS** refers to Commonwealth Government Securities.
 - (e) **Current access arrangement** refers to the access arrangement approved by the AER and is currently applicable to a service provider under the National Gas Law and National Gas Rules.
 - (f) **Curve provider/s** refers to Reserve Bank of Australia (RBA), Bloomberg Valuation Service Limited (Bloomberg) and Thomson Reuters.
 - (g) **Distribution network service provider** has the meaning given to it in the National Electricity Law and National Electricity Rules.
 - (h) **Initial proposal** refers to a service provider's initial **regulatory proposal** to the AER.
 - (i) **Months** refers to calendar months.
 - (j) **Regulatory control period** refers to both the term 'regulatory control period' which has the meaning given to it in the National Electricity Law and National Electricity Rules, and 'access arrangement period' which has the meaning given to it in the National Gas Law and National Gas Rules.
 - (k) **Regulatory proposal** refers to a service provider's proposal to the AER for the purposes of the AER determining or approving the service provider's revenue or

access arrangement under either the National Electricity Law and National Electricity Rules or the National Gas Law and National Gas Rules.

- (l) **Regulatory year** refers to a single year in a **regulatory control period**
- (m) **Return on debt averaging period** refers to the period over which the daily yield estimates are averaged, using a simple average, for the purposes of calculating the service provider's allowed return on debt, and is determined in accordance with clause 17.
- (n) **Revision commencement date** has the meaning given to it in the National Gas Law and National Gas Rules.
- (o) **Risk free rate averaging period** refers to an averaging period determined in accordance with clause 6.
- (p) **Service provider** refers to a **transmission network service provider**, **distribution network service provider**, and/or a service provider for the purposes of the National Electricity Law, National Electricity Rules, National Gas Law and the National Gas Rules.
- (q) **Transition period** refers to the period prior to the return on debt being calculated using a trailing average.
- (r) **Transmission network service provider** has the meaning given to it in the National Electricity Law and National Electricity Rules.