Mr. Warwick Anderson

General Manager, Networks Finance and Reporting
Australian Energy Regulator
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Canberra ACT 2601

Submission to regulatory treatment of inflation – Discussion Paper

Dear Warwick,

Citigroup Australia ("**Citi**") welcomes the opportunity to make a submission in response to the AER's discussion paper on the regulatory treatment of inflation for the 2020 Inflation Review.

As part of one of the world's largest financial services companies with a presence in nearly 100 countries, Citi Australia has been providing financial services to Australian consumers, corporations, institutions and governments for more than 30 years. Recognised for its innovative range of global products and services, Citi today counts more than one million Australians and one thousand local corporate and institutional clients as valued customers.

Citi's Banking, Capital Markets and Advisory ("**BCMA**") division provides strategic advisory services, debt and equity capital markets and balance sheet lending to support clients across many industries, including the utilities sector. Our broad engagement in the sector provides us with unique insights on key issues in the financing and valuation of regulated utilities.

Citi has prepared a submission in relation to the treatment of inflation in the AER's regulatory framework. We have used a bottom-up approach to review the impact of the treatment of inflation on the rate of return and financeability of Network Service Providers ("**NSP**"). The assessment of the rate of return is conducted by testing the treatment against the net present value ("**NPV**") neutrality framework. This paper does not advocate for a particular method that results in the best estimates of expected inflation but rather, assesses the implication of a sustained deviation between expected and actual inflation when applied in the post-tax revenue model ("**PTRM**") and roll-forward model ("**RFM**").

In summary, the frequency and duration of the deviation between actual inflation and the RBA target band has significantly deteriorated over time. A majority of the observed deviations are actual inflation underperforming the RBA target band. This has resulted in a notable deviation from the AER's regulatory framework of NPV neutrality and introduced additional elements of risk for both equity investors and lenders.

While a different inflation forecasting method could help minimise the error under the NPV neutrality principle, a potential solution for eliminating this error is a true-up mechanism for the over (under) performance. We understand that other stakeholders have proposed potential solutions which include using the same inflation figure in the PTRM and RFM in relation to debt capital. We acknowledge and support these methods as a step forward to resolving the error.

Approach

Our approach has been to review the historical standard deviation of inflation and analyse recent AER determinations to assess the impact of deviation between expected and actual inflation on the rate of return achieved by NSPs and the financeability of NSPs. We refer to Moody's rating methodology "Regulated Electric and Gas Networks"[1] to assess the relevant credit metrics used for regulated networks.

The approach and method adopted as part of this review is as follows:

1. Review the historical standard deviation of inflation and duration of any sustained deviation;
2. Identify and review the mechanical inputs of actual and expected inflation in the AER's regulatory framework;
3. Assess the theoretical impact of a deviation between actual and expected inflation on an overall rate of return;
4. Assess the impact of a deviation between actual and expected inflation on various NSPs in accordance with the PTRM modified with a roll-forward adjustment;
5. Review the impact of a sustained deviation between actual and expected inflation on the rate of return and relevant credit metrics of NSPs over two regulatory determination periods

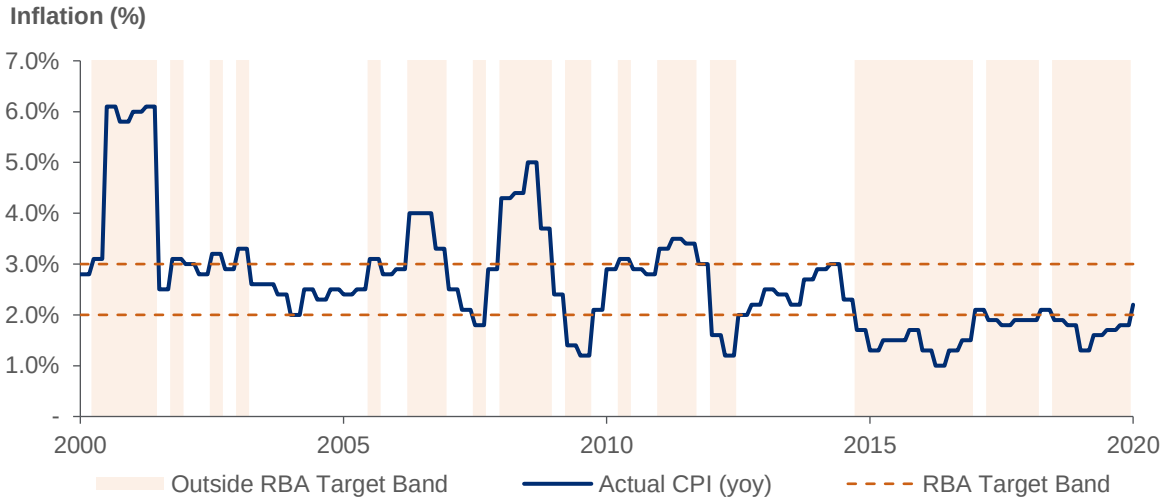
Observations on Actual Inflation

The AER's current regulatory framework forecasts inflation by using a 10 year geometric annualised average of the Reserve Bank of Australia's (RBA) headline rate forecasts for years 1 and 2 and the mid-point of the RBA's target band for inflation of 2 to 3 per cent for years 3 to 10 ("**RBA Approach**"). Since the 1990s, the RBA's target band inflation policy has had significant influence over long-term inflation expectations and has historically had strong success in suppressing high inflation, such as that experienced in the 1970s and 1980s. In the recent years however, inflation has remained low and below the RBA's target band for inflation.

We make the following observations on historical inflation and its performance against the RBA's target band:

- The standard deviation of inflation is between 0.75% and 0.90% from the midpoint of the RBA's target band of 2.5% over a 5-year, 10-year and 15-year time horizon[2];
- This means that at most c.40% of the observations of inflation over the last 15 years have been within the RBA's target band of 2.0% - 3.0%; and
- The frequency and sustained deviation of actual inflation from the RBA target band of 2.0% - 3.0% has significantly increased since 2015 – almost 90% of the observations of inflation are outside RBA's target band; and
- Deviation of actual inflation relative to the RBA target band displays a downward bias – a significant majority of the deviations are actual inflation underperforming RBA's target band of 2.0% - 3.0% (observed to be at least c.67% over the last 15-years); and
- This has worsened recently with 100% of the deviations showing actual inflation underperforming RBA's target band over the last 5-years.

[1] Rating methodology update as at 16 March 2017
[2] ABS data as at 31 March 2020



Source: ABS, RBA

% Observation at Various Time Horizon	5-year	10-year	15-year
Above RBA Target Band	-	9.9%	19.9%
Below RBA Target Band	88.5%	52.1%	39.8%
Total Outside RBA Target Band	**88.5%**	**62.0%**	**59.7%**

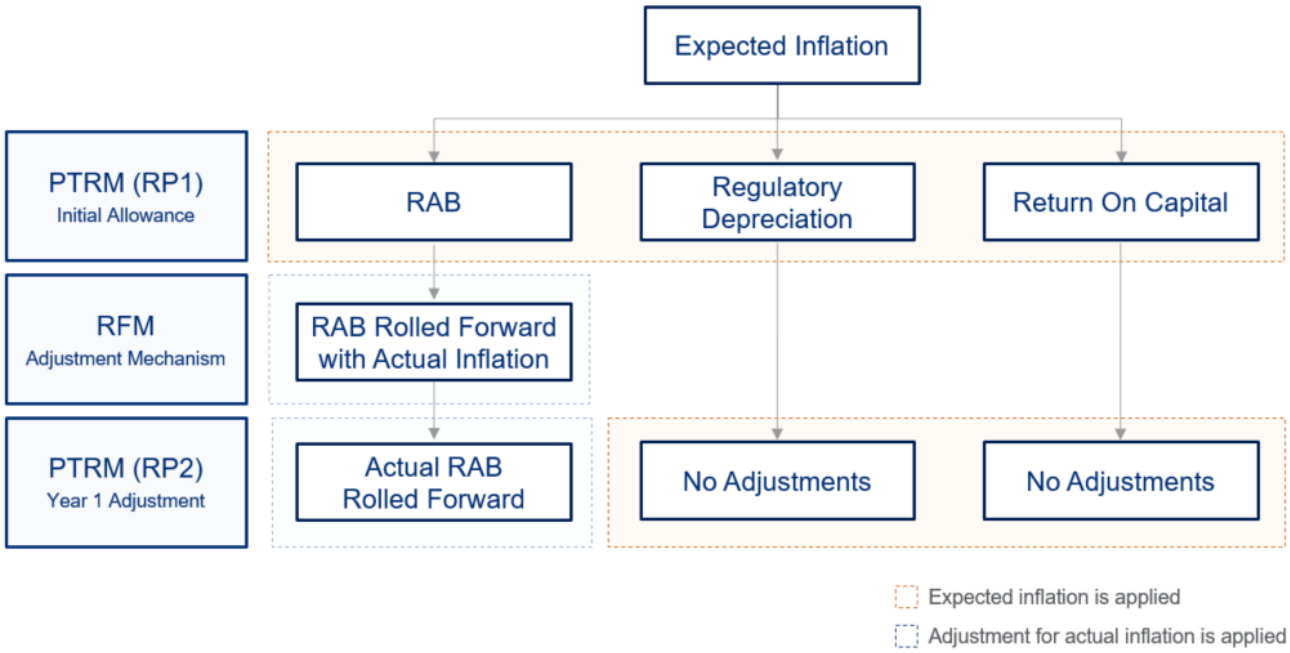
Under the AER's regulatory framework, we understand the RBA Approach is the current method for forecasting inflation and thereby represents expected inflation as a proxy (ex-ante) for actual inflation. While the RBA Approach may have been a good proxy in the past, we note that this method for expected inflation has significantly deviated from actual inflation over time.

Setting aside the statistical observations, it is important to consider the practical implication of a sustained deviation between expected and actual inflation for NSPs. If a sustained deviation were to occur, we have observed that it results in an outperformance in the revenue allowance in a high inflation environment and an underperformance in the revenue allowance in a low inflation environment. In addition, no true-up or alignment mechanism is available to re-align this deviation. The effect is a de-coupling of the supposed inflation-linked revenue allowance from the actual inflationary environment that compounds with each regulatory period.

A sustained deviation between actual and expected inflation can unintentionally increase the risk profile of the NSPs for both investors and debt financers. An increase in risk profile can lead market participants to raise their required cost of equity and / or debt margins over the long-term.

Actual and Expected Inflation

The impact of the deviation between actual and expected inflation is due to the mechanical input and interaction between the PTRM and RFM. Expected inflation is an input used in the PTRM to forecast return on capital and regulatory depreciation for a given regulatory period (nominal depreciation less forecast indexation on RAB). Actual inflation is an input used in the RFM to roll forward the RAB in-between regulatory periods (i.e. only the RAB is adjusted for actual inflation).



Source: Citi

The application of actual inflation in the RFM is effectively a 'true-up' of RAB for the next regulatory period. Regulatory depreciation and return on capital, however, is not captured in the RFM calculations and do not receive a 'true up' to account for the difference between expected and actual inflation, despite the RAB being adjusted for actual inflation. This means the NPV neutrality does not hold. The NPV neutrality aims to achieve a zero difference in NPV and assumes the equation[3] below holds true:

Actual Inflation Applied

$$RAB_0 = RAB_n \times d_n + \sum_{t=1}^{n} (\text{Return on Capital}_t + \text{Regulatory Depreciation}_t - \text{Regulatory Capex}_t) \times d_t$$

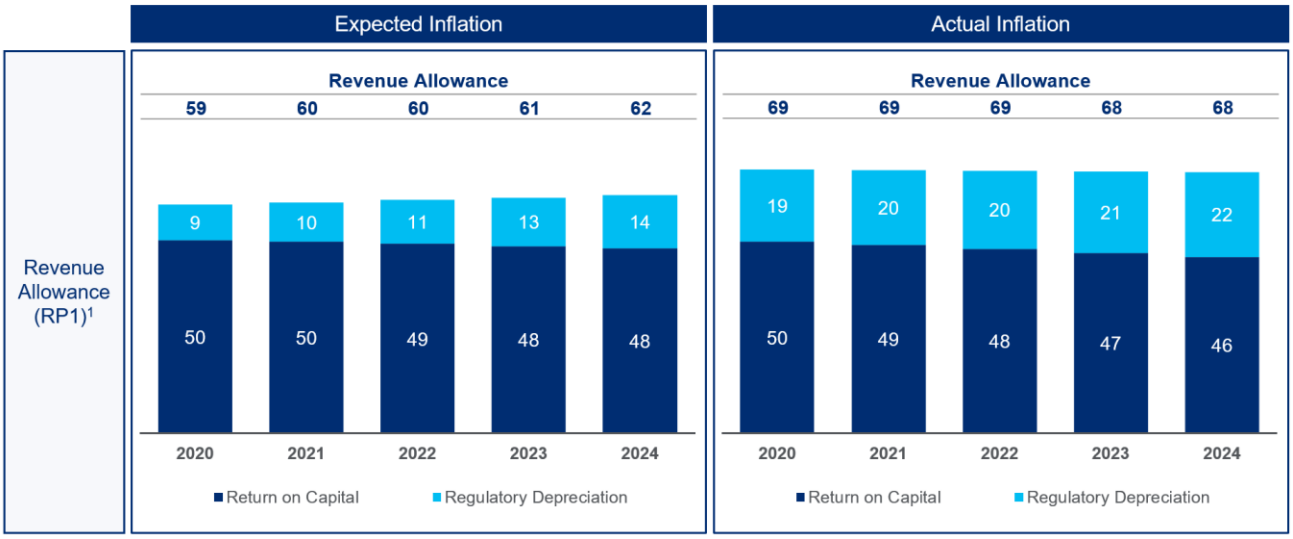
Forecast Inflation Applied

Where:
t = time period
n = end of observational period
d = WACC discount rate

The equation only holds true if expected inflation is equal to actual inflation. If actual inflation is lower than expected inflation, a 'permanent loss' of revenue allowance occurs. The converse is also true if actual inflation is higher than expected inflation – a 'permanent gain' of revenue allowance arises. We note the return on capital has a slight offsetting impact but this is often significantly outweighed by the impacts on regulatory depreciation.

[3] RAB is indexed to actual inflation at the end of the regulatory period through the roll forward model. Regulatory depreciation and return on capital are not adjusted for actual inflation. Regulatory depreciation has a very small element of actual inflation through the application of lagged inflation on regulatory capex but this is immaterial.

We have provided an illustrative example below based on $1,000 RAB and 5% WACC over the first regulatory period (RP1). Further details on the assumptions are provided in Appendix B. The illustration examines two cases: (1) revenue allowance assuming expected inflation at 2.5% p.a.; and (2) revenue allowance assuming actual inflation at 1.5% p.a.



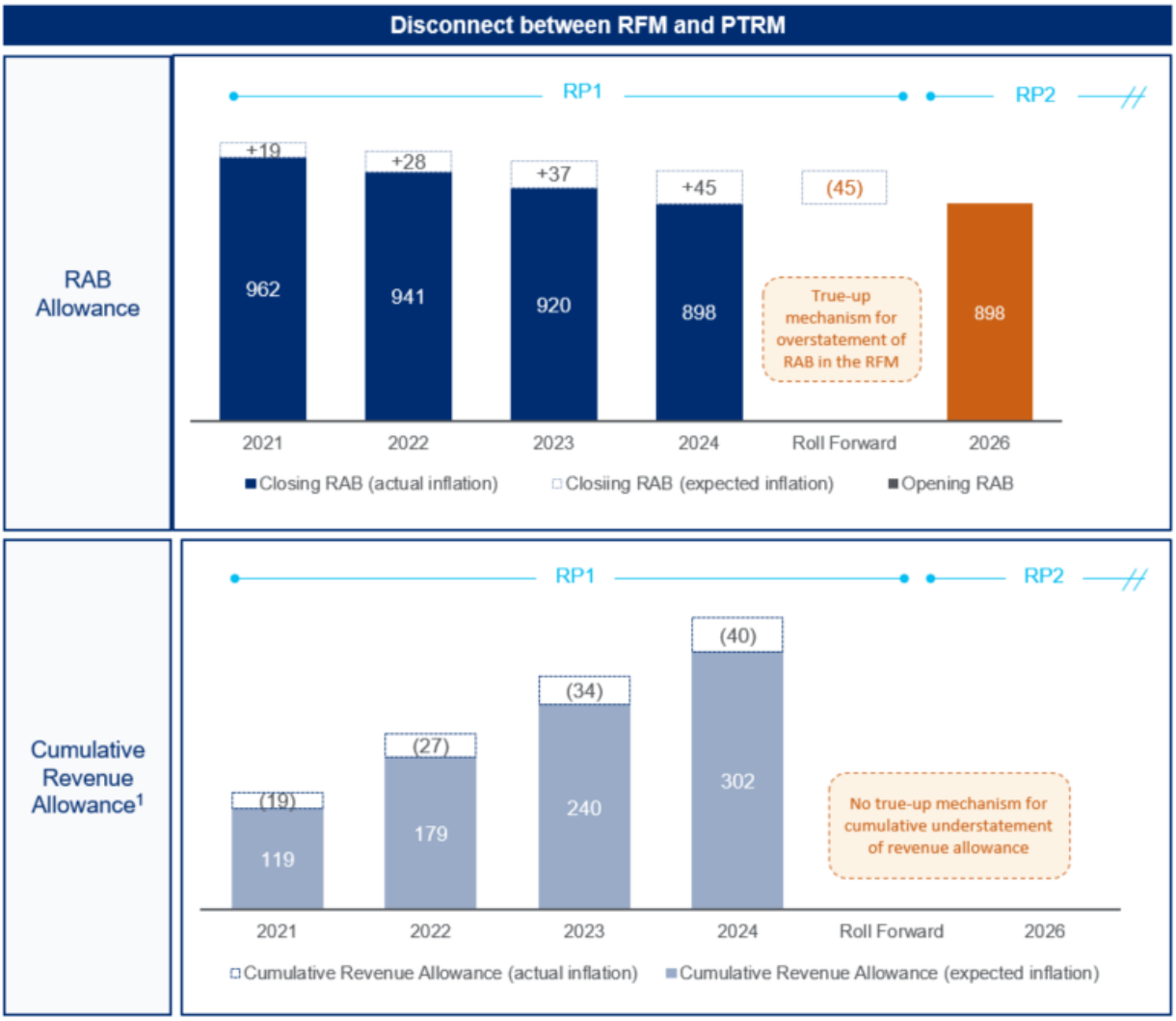
Notes: (1) Revenue allowance includes only return on capital plus regulatory depreciation. All other items are nil.

In our illustration above, the expected inflation represents the revenue allowance received under the AER's existing regulatory framework. Actual inflation represents the revenue allowance based on actual inflation but not received under the framework.

We make the following observations regarding the impacts during RP1 in our illustration;

- Forecast inflation understates the revenue allowance received by the illustrative NSP in RP1;
- While return on capital under expected inflation is overstated (c. $1 - 2 p.a.), this is significantly outweighed by the understatement of regulatory depreciation (c. $8 - 10 p.a.);
- Net impact is a cumulative understatement of revenue allowance by $40 over RP1 or 4.0% of opening RAB in nominal terms; and
- This understatement of revenue allowance is not recoverable (true-up) under the existing regulatory framework.

While an understatement of revenue allowance due to a difference between expected and actual inflation is not recovered, any overstatement of RAB due to a difference between expected and actual inflation is adjusted via roll-forward in the RFM. This difference in regulatory treatment creates a distortion whenever a deviation between expected and actual inflation occurs. This is shown in the following illustration:



Source: Citi

Notes: (1) Revenue allowance includes only return on capital plus regulatory depreciation. All other items are assumed to be nil for illustrative purposes.

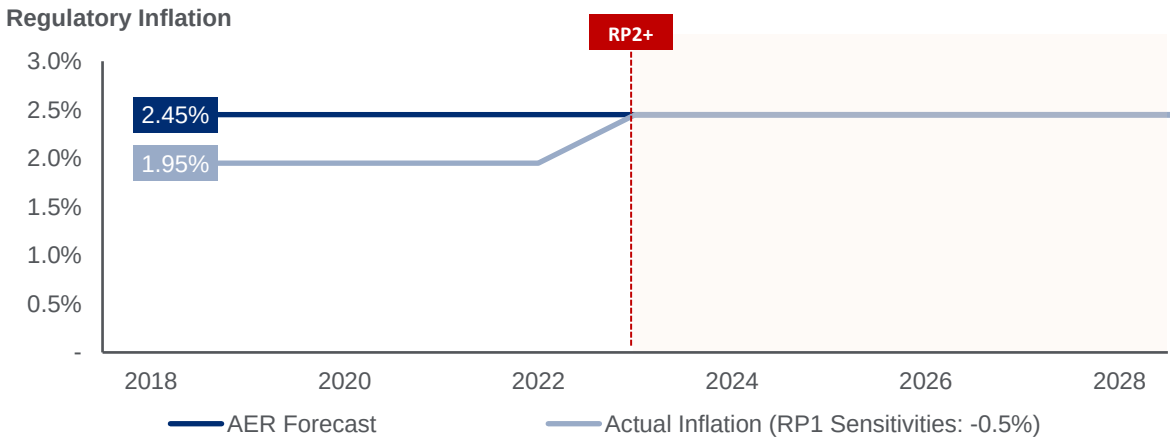
We make the following observations regarding the impacts of the different treatment of inflation between the PTRM and RFM models:

- Roll-forward (true-up) reduces RAB by $45 to reflect the overstatement of expected inflation over RP1;
- Cumulative loss of revenue allowance is $40[4] due to the understatement on regulatory depreciation (nominal depreciation less expected inflation);
- No corresponding roll-forward, true-up or alignment mechanism for the understatement of revenue allowance is made, leading to a 'permanent loss' on revenue allowance; and
- The NPV neutrality equation therefore does not hold.

[4] This amount also includes the offsetting impact of return on capital (via temporarily higher RAB)

Impact on Rate of Return

We have examined the broad impact on the rate of return for existing regulated utilities. We ran sensitivities to analyse the impact of actual inflation underperforming the AER's expected inflation by 50bps during the initial regulatory period ("RP1"). The revenue allowance follows the AER's determination (AER Forecast) during RP1. Any difference between actual inflation and the AER's determination (expected inflation) is captured in the roll-forward of RAB for the subsequent regulatory periods (RP2+).



Source: AER, APA VTS – PTRM – 2020 Return on debt update

We have found the same impact of a deviation between expected and actual inflation when applied to the PTRM with a roll-forward mechanism for RAB. The underperformance of actual inflation (relative to expected inflation) results in a reduction of RAB which is not compensated with an adjustment to revenue allowance (negatively impacting both equity investors and lenders). The analysis of the PTRM cash flows, with a roll-forward mechanism, reflects this observation.

APA VTS – Cash Flow Delta[5] (Incl. End Period RAB)

Year Period	**FY19**	**FY20**	**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**	**FY27**	**FY28**
Regulatory Period	RP1	RP1	RP1	RP1	RP1	RP2	RP2	RP2	RP2	RP2
AER Forecast	9	1	7	72	67	82	80	78	78	1,103
Actual Inflation	4	(4)	2	68	63	82	80	78	78	1,103
Delta Difference	**(5)**	**(5)**	**(5)**	**(5)**	**(4)**	**-**	**-**	**-**	**-**	**-**

Source: AER, APA VTS – PTRM – 2020 Return on debt update

We note the following impact:

- Reduction of cash flow in RP1 is driven by a lower regulatory depreciation which outweighs the impact of a higher return on capital (further details are shown in Appendix A);
- No impact on RP2 cash flows as the roll-forward mechanics ensure the AER forecast RAB (via roll forward) is re-aligned to actual inflation in RP2;
- Directional impact on cash flows are observed across various NSPs. The quantum of the impact varies according to the magnitude of the regulatory depreciation; and

[5] Comprises of end of period RAB, return on capital, regulatory depreciation and regulatory capex which are regulatory allowance items for the NPV neutrality equation. Regulatory capex is elevated over FY19-21 which results in lower cash flows.

- NPV of delta difference is not equal to zero which indicates NPV neutrality does not hold.

We have conducted this sensitivity analysis across a broad sample of NSPs to assess the impact of actual inflation underperforming AER's expected inflation by 50bps for RP1 only. The sample results show the error is consistent across various regulated utilities:

Regulated Utilities[1]	Forecast Inflation	Actual Inflation	Opening RAB ($m)	NPV Impact ($m)	NPV % Opening RAB
APA Victoria Transmission System	2.45%	1.95%	971	(21)	(2.1%)
Ausgrid Distribution	2.45%	1.95%	13,779	(285)	(2.1%)
SA Power Networks	2.50%	2.00%	3,778	(84)	(2.2%)
Endeavour Energy	2.42%	1.92%	6,526	(141)	(2.2%)
TransGrid	2.45%	1.95%	6,371	(128)	(2.0%)
Jemena	2.35%	1.85%	1,187	(29)	(2.5%)

Source: AER, PTRM – Return on debt update, Citi
Notes: (1) based on the most recent determinations of annual cost of the debt updates

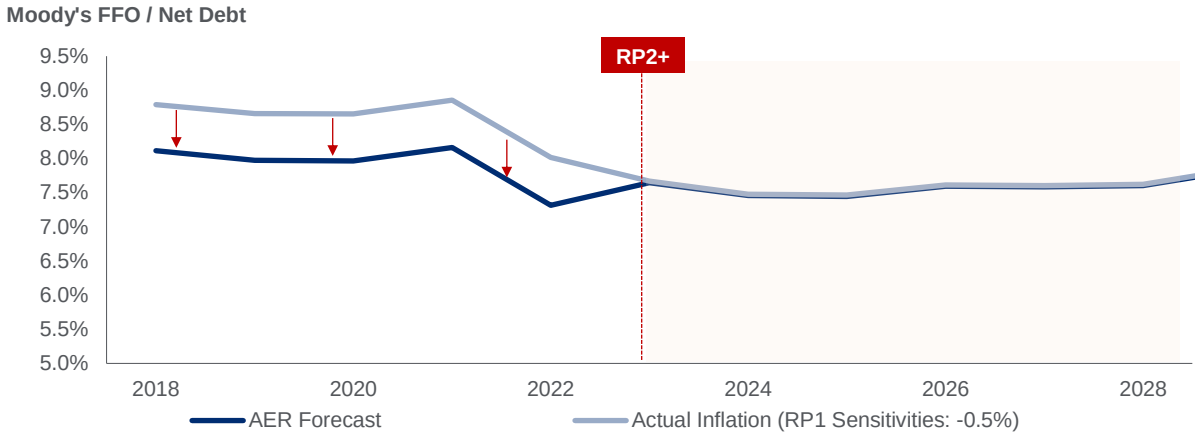
We consider a potential error of up to 2.5% of opening RAB is significant given it represents an underperformance of actual inflation by approximately 50bps. Further, a sustained difference between actual and expected inflation has a compounding effect.

While a superior inflation forecasting method may minimise the NPV impact, we believe that any forecasting method will have a degree of tracking error. We believe a potential solution is a true-up mechanism for the difference in actual and expected inflation which can effectively mitigate this issue. We understand that other stakeholders have proposed potential solutions which include using the same inflation figure in the PTRM and RFM in relation to debt capital. We acknowledge and support these methods as a step forward to resolving the error.

Absent of a true-up or other alignment mechanism, a sustained deviation between expected and actual inflation will deviate further away from the NPV neutrality framework. This is undesirable as it elevates the risk profile given the revenue allowance is neither inflation-linked nor providing the correct theoretical rate of return. The elevated risk profile potentially creates a disincentive for investors and lenders to deploy capital into NSPs. In the current low interest rate and low inflation environment, any capital deployed would receive a lower regulatory depreciation allowance in addition to the already low return on capital. Maintaining a proper incentive will be important to ensure efficient investments for the critical infrastructure projects, such as the upcoming ISP contingent projects

Financeability

The majority of regulated utilities are rated under Moody's Regulated Electric and Gas Networks methodology, and seek to prudently manage the capital structure to target an investment grade credit rating. Across a spectrum of regulated utilities, we have observed a focus on Moody's FFO / Net Debt which is becoming the key credit metric.



Source: AER, APA VTS – PTRM – 2020 Return on debt update

As regulated networks transition towards a lower rate of return environment, the regulatory depreciation will play a key role in offsetting the downward pressure on return on capital and therefore Moody's FFO / Net Debt over the short-term.

A constraint on the Moody's FFO / Net Debt may restrict the quantum of debt that could potentially be provided to regulated utilities. In turn, equity investors may be required to provide a larger allocation of equity contribution in the funding mix. This can lead to a sub-optimal funding structure. The dynamic can further disincentivise both investors and lenders to commit capital to larger projects including contingent ISP projects.

In the current low interest rate and inflationary environment, an alignment of expected and actual inflation may better support efficient investment for new projects and financing of NSPs. Implementing a true-up mechanism would eliminate the deviation between expected and actual inflation. The true-up would be undertaken by calculating the NPV difference in the regulatory allowance between actual and expected inflation over a single regulatory period. The NPV difference would represent the under / over recovery to be brought forward in the next regulatory period. We understand that other stakeholders have proposed potential solutions which include using the same inflation figure in the PTRM and RFM in relation to debt capital. We acknowledge and support these methods as a step forward to resolving the error.

Conclusions

The frequency and duration of the deviation between actual inflation and RBA target band has significantly increased over time. A majority of the observed deviations are actual inflation underperforming the RBA target band.

The sustained underperformance of actual inflation relative to expected inflation has resulted in a notable deviation under AER's regulatory framework of NPV neutrality. In the current environment, the understatement of the regulatory allowance for the regulatory depreciation creates uncertainty, and therefore introduces additional elements of risk for both equity investors and lenders.

We have observed the recent impact on financeability due to the sustained underperformance of actual inflation relative to expected inflation. The inability to track or recover the underperformance of revenue allowance has resulted in an adverse impact on rate of return and credit metrics.

While a better inflation forecasting method would help minimise the error under the NPV neutrality framework, a potential solution for eliminating this error is a true-up mechanism for the over (under) performance. We understand that other stakeholders have proposed potential solutions which include using the same inflation figure in the PTRM and RFM in relation to debt capital. We acknowledge and support these methods as a step forward to resolving the error.

If you have any question or would like to discuss further on this submission, please contact either of the below or Stephen Lo on [redacted].

Yours sincerely,

[redacted]

[redacted]

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Appendix A – APA VTS PTRM

PTRM Cash Flows Delta – Actual Inflation & AER Forecast

Year Period	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28
Regulatory Period	RP1	RP1	RP1	RP1	RP1	RP2	RP2	RP2	RP2	RP2
Summarised Cash Flows										
AER Forecast	9	1	7	72	67	82	80	78	78	1,103
Actual Inflation	4	(4)	2	68	63	82	80	78	78	1,103
Cash Flow Delta[1]	**(5)**	**(5)**	**(5)**	**(5)**	**(4)**	**-**	**-**	**-**	**-**	**-**
RAB Allowance										
Closing RAB[2]	**5**	**10**	**16**	**22**	**27**	**-**	**-**	**-**	**-**	**-**

Notes: (1) No true-up received for difference in cash flows for expected and actual inflation i.e. negative difference of $24m is permanent. (2) RAB receives a true-up for actual inflation via roll-forward model i.e. both AER expected and actual inflation align in RP2, and no permanent differences arises.

AER Forecast – RP1 Forecast Inflation with RP2 RAB Roll Forward (Existing Allowance)

(RP1: 2.45% AER Forecast, RP2: 2.45% AER Forecast)

Year Period	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28
Regulatory Period	RP1	RP1	RP1	RP1	RP1	RP2	RP2	RP2	RP2	RP2
Cash Flow Build-Up										
Return on Capital	56	59	61	65	64	63	62	61	60	59
Return of Capital	13	16	18	21	17	19	18	17	18	18
Capex	(65)	(79)	(77)	(18)	(19)	-	-	-	-	-
End of Period RAB	-	-	-	-	-	-	-	-	-	1,026
Cash Flows	**4**	**(4)**	**2**	**68**	**63**	**82**	**80**	**78**	**78**	**1,103**
RAB Allowance										
Closing RAB	**1,023**	**1,086**	**1,145**	**1,142**	**1,143**	**1,097**	**1,079**	**1,062**	**1,044**	**1,026**

Actual Inflation – RP1 Actual Inflation (Correct Allowance)

(RP1: 1.95% Actual Inflation, RP2: 2.45% AER Forecast)

Year Period	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28
Regulatory Period	RP1	RP1	RP1	RP1	RP1	RP2	RP2	RP2	RP2	RP2
Cash Flow Build-Up										
Return on Capital	56	58	61	64	63	63	62	61	60	59
Return of Capital	18	21	23	27	22	19	18	17	18	18
Capex	(64)	(78)	(76)	(18)	(18)	-	-	-	-	-
End of Period RAB	-	-	-	-	-	-	-	-	-	1,026
Cash Flows	**9**	**1**	**7**	**72**	**67**	**82**	**80**	**78**	**78**	**1,103**
RAB Allowance										
Closing RAB	**1,018**	**1,075**	**1,129**	**1,120**	**1,116**	**1,097**	**1,079**	**1,062**	**1,044**	**1,026**

Appendix B – Illustrative Analysis

Assumptions

- Forecast inflation: 2.50%
- Actual inflation: 1.50%
- Nominal WACC: 5.00%
- Opening RP1 RAB: $1,000
- Asset life: 30-years, straight-line depreciation
- Capex: Nil