



Expert Statement on ANP's use of Recovered Capital Method to determine NTS's RAB value

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Glossary

TERMS	MEANING
ACCC	Australian Consumer and Competition Commission – national regulator of competition and consumer rights
AER	Australian Energy Regulator
ANP	Agência Nacional do Petróleo, Gás Natural e Biocombustíveis, National Agency for Petroleum, Natural Gas and Biofuels
Capex	Capital expenditure
Energy Ministers	The Council of Australian Government Energy Ministers comprising energy ministers from the Commonwealth, state and territory governments
DRV	Depreciated Replacement Value
GRMG	Gas Market Reform Group
NGL	Australia's National Gas Law
NGR	Australia's National Gas Rules
Non-scheme pipelines	Gas transmission pipelines and gas distribution networks that are not subject to price regulation under the National Gas Law and National Gas Rules. Rather, they are subject to an ongoing information disclosure regime in relation to their price and non-price access terms and conditions
NRV	New Replacement Value
NTS	Nova Transportadora do Sudeste S.A.
Opex	Operating expenditure
RAB	Regulatory Asset Base
RCM	Recovered Capital Method
Technical Note	Nota Technica 14 published by ANP
Unregulated Pipelines	Pipelines that are either not subject to price regulation by the AER or are not subject to any form of regulatory oversight under the National Gas Law and Rules
Scheme pipelines	Gas transmission pipelines and gas networks that are subject to price regulation under the National Gas Law and National Gas Rules
Vertigan Report	Examination of the current test for the regulation of gas pipelines, Report, 14 December 2016, Dr Michael Vertigan AC

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1 Introduction

- 1.1.1 I have been requested by Nova Transportadora do Sudeste S.A. (NTS) to provide my expert opinion on Nota Técnica 14 (**Technical Note**) the Technical Note prepared by Agência Nacional do Petróleo, Gás Natural e Biocombustíveis (ANP, National Agency for Petroleum, Natural Gas and Biofuels). The Technical Note proposes the application of the Recovered Capital Method (**RCM**) to determine the initial Regulatory Asset Base (**RAB**) for the purpose of setting tariffs for NTS' gas transportation services in the post-2025 regulatory period.
- 1.1.2 I am Professor of Economics and Director of the Australian Institute for Business and Economics at The University of Queensland. I am also a member of the Australian Competition Tribunal and the Sydney Airport Demand Management Compliance Committee. I was formerly Chair of the Queensland Competition Authority for three terms and served as a member of its board for nearly a decade. I have more than three decades of experience providing advice to businesses and governments on regulation, competition and market design issues in Australia and internationally.
- 1.1.3 The RCM is a novel asset valuation methodology developed in Australia and incorporated into the National Gas Rules for a very specific purpose. It may be considered by an arbitrator as one of several possible asset valuation methodologies in access disputes involving gas transmission pipelines that are **not** subject to price regulation (non-scheme pipelines). It **has not** been developed or adopted as a methodology for establishing the initial regulatory asset base for price-regulated pipelines (scheme pipelines). The form of regulation currently proposed by the ANP for NTS is equivalent to the Australian price regulation framework applied to scheme pipelines (to which RCM is **not** applicable in Australia) rather than the negotiate-arbitrate framework that applies to non-scheme pipelines (to which RCM may be applied in Australia).
- 1.1.4 This report examines the ANP's proposed application of the RCM in the context of establishing an initial RAB value for NTS. It assesses the proposal against the principles of modern economic regulation and Australian regulatory practice, considers its implications for regulatory certainty and investment incentives, and addresses some factual inaccuracies and misunderstandings in the Technical Note concerning the development, adoption and application of the RCM in Australia.
- 1.1.5 This report is structured as follows:

- (a) Section 2 summarises the ANP's proposed application of the RCM.
- (b) Section 3 considers the implications of Petrobras' vertical integration and the 2016 sale process for the application of the RCM.
- (c) Section 4 assesses the ANP's proposed approach against the principles of modern economic regulation.
- (d) Section 5 examines the development and application of the RCM in Australia and its relevance to the issues considered in this report.
- (e) Section 6 presents my concluding observations.

2 Overview of ANP's Technical Note 14

- 2.1.1 The Technical Note sets out a proposed approach to determining the initial RAB for NTS' gas transmission pipelines at 1 January 2026. It explains the rationale for the proposed methodology and applies that methodology to estimate the RAB value.
- 2.1.2 The ANP expresses concern that conventional asset valuation methodologies may allow investors to recover capital that has already been recovered through legacy contractual arrangements. It proposes the RCM as a means of addressing this concern, arguing that the methodology is anchored in the actual construction costs of the pipelines, together with subsequent capital expenditure and the costs of operating and maintaining the pipeline system.
- 2.1.3 In proposing use of the RCM, the ANP identifies several implementation issues, including:
- the impact of the assumed historical weighted average cost of capital (WACC) on the resulting RCM valuation;
 - the treatment of periods of negative inflation;
 - the application of a backward-looking (ex post) asset valuation methodology within a forward-looking (ex ante) building-blocks framework for price regulation; and
 - the availability and reliability of historical data required to produce a robust and credible RCM-based RAB valuation.
- 2.1.4 ANP's application of the RCM raises several concerns that I will further address in providing my opinion as follows:
- ANP's reliance on cost and revenue data from the period when Petrobras was a vertically integrated provider of gas supply and gas pipeline transportation services and such financial data represented internal financial transfers not market outcomes.
 - ANP's proposed application of the RCM is inconsistent with modern regulatory economics theory and practice that, in practice, should avoid creating substantial and unexpected redistributions of wealth between the parties. Specifically, ANP's retrospective focus on reconstructing historical capital recovery differs fundamentally from the forward-

looking objective of establishing an initial regulatory asset base value that supports efficient future investment. This is contrary to ANP's view that:¹

applying the [RCM] method can be compatible with the principles of legal certainty, regulatory predictability, and investment incentives, provided that it is based on transparent, auditable, and methodologically consistent criteria.

- ANP's description of how the RCM has been applied in Australia since its implementation, failing to recognise the RCM's very limited potential use in relation to non-scheme pipelines only and not for the purpose of applying price regulation.

2.1.5 The impact of ANP's input assumptions in applying the RCM fundamentally drives the negative asset base value that it has estimated for the start of the new gas pipeline pricing framework in 2026. There is not a body of application of RCM to draw upon in forming my opinion because it simply does not exist. However, the differences in the RCM concept to normal regulatory principles and practice do allow for observations to be made in relation to ANP's application of the RCM and the resulting outcome.

2.1.6 Further, the outcome of the Technical Note also gives rise to broader questions concerning its consistency with established principles of economic regulation and, based on the legal materials provided to me by NTS, with the Brazilian regulatory framework. In particular, the resulting write-down of the regulatory asset base to zero appears difficult to reconcile with the interpretation of Article 44 of Law No. 14,134/2021 (the New Gas Law) described later in this report. While I do not express an independent opinion on Brazilian law, if that interpretation is correct, the outcome appears inconsistent with the legislative emphasis on legal certainty, regulatory predictability and the preservation of rights arising under existing transportation contracts.

¹ Technical Note, section 2.4

3 Use of Petrobras' data in RCM calculation

- 3.1.1 The purpose of this section is to discuss ANP's inclusion in its RCM calculation of the period when Petrobras owned and operated the pipeline assets now owned by NTS.

3.2 Petrobras' vertical integration and the application of the RCM

- 3.2.1 Vertical integration occurs when different stages of the supply chain for a product or service are undertaken by the same entity.
- 3.2.2 The ANP's proposed application of the RCM to the NTS pipeline assets commences in 2006, when Petrobras owned the pipeline system and operated it through its fully owned subsidiary Transpetro and a consortium formed by Petrobras and its subsidiaries NTS, TAG and Transpetro. Petrobras also engaged in gas exploration and production. Petrobras was therefore vertically integrated across key segments of the Brazilian gas supply chain. Although the pipeline business was conducted through a separate legal entity, it remained part of a single vertically integrated corporate group under Petrobras' ownership and control.
- 3.2.3 Vertical integration has important implications for the application of the RCM. Within a vertically integrated firm, accounting systems are designed primarily for internal management and financial reporting purposes rather than to replicate the prices, costs and revenues that would arise from transactions between independent market participants.
- 3.2.4 As a consequence, the revenues, costs and asset values reported for individual business units or assets are generally the result of internal allocations rather than arm's-length commercial transactions. This issue becomes particularly significant where there are substantial common or joint costs, as there is no unique or economically correct basis for allocating those costs across different parts of the business.
- 3.2.5 The ANP's proposed approach requires the hypothetical separation of NTS from Petrobras and its various subsidiaries over the period 2006 to 2016 and then relies on historical revenues and costs to apply the RCM. However, because Petrobras was vertically integrated during that period, those historical accounting data do not represent market outcomes and therefore cannot be assumed to reflect the revenues and costs that would have arisen had the pipeline business operated as an independent entity.

- 3.2.6 In economic terms, the internal charges recorded within a vertically integrated firm are transfers between different parts of the same organisation. They are determined through internal accounting policies and management decisions rather than competitive market forces. Internal allocations may also be influenced by financial reporting objectives, taxation considerations, organisational incentives or other administrative factors that have little or no relationship to market prices.
- 3.2.7 Applying RCM is fundamentally an ex post capital recovery exercise. It only makes sense if the historical revenues and costs are economically meaningful. Under vertical integration they are not—they are accounting allocations, not market outcomes. Therefore, the inputs required by the RCM simply do not exist. This issue becomes even clearer when one considers the source of the economic rents generated by Petrobras' integrated production and transportation activities as discussed next.

3.3 Economic rent and the application of the RCM

- 3.3.1 In economics, **economic rent** refers to the return earned above the amount required to compensate all inputs into production, including an appropriate return on invested capital.
- 3.3.2 In the natural resource sector, economic rent arises from ownership of a scarce resource such as a gas or oil reserve. It reflects the value of the resource in situ after allowing for all efficient costs of exploration, development, extraction, processing and transportation, together with a normal return on the capital employed in those activities.
- 3.3.3 This differs fundamentally from gas transportation. Pipeline services are provided using reproducible infrastructure assets that can be expanded through investment and maintained over time. Consequently, the economic value of a pipeline business should reflect the efficient costs of providing transportation services, including an appropriate return on invested capital, rather than the scarcity value of the underlying gas resource.
- 3.3.4 When Petrobras owned both the gas reserves and the pipeline system through its vertically integrated corporate group, any economic rent associated with the exploitation of the gas resource accrued to the integrated enterprise. The source of that rent was ownership of the gas reserves, not ownership of the transportation assets.

- 3.3.5 This distinction is important for the application of the RCM. Within a vertically integrated enterprise, internal charges for the use of pipeline infrastructure are administrative allocations rather than market prices negotiated between independent parties. Because the integrated business captures both the resource rent associated with gas production and the costs of transportation, there is no economic basis for concluding that those internal charges reflect the prices, revenues or returns that would have prevailed had the pipeline been operated as an independent business.
- 3.3.6 Consequently, the internal revenues and costs recorded by Petrobras during the vertically integrated period cannot be regarded as reliable indicators of the economic performance of a stand-alone pipeline business. They therefore provide an uncertain foundation for any methodology, such as the RCM, that seeks to reconstruct historical capital recovery from past revenues and costs.

3.4 Implications of the Petrobras Divestment

- 3.4.1 The divestment of the pipeline assets transformed the ownership of the pipeline system from a vertically integrated enterprise into an independent pipeline business. However, that change in ownership does not alter the fundamental difficulty associated with the historical data generated during the vertically integrated period.
- 3.4.2 The historical revenues and costs observed before the divestment were generated within an integrated enterprise rather than through transactions between independent buyers and sellers. As a result, they cannot be assumed to represent the revenues and costs that would have been earned by an independently owned and operated pipeline business.
- 3.4.3 This is particularly relevant where the RCM seeks to reconstruct historical capital recovery. The methodology implicitly assumes that the historical revenues and costs used in the calculation provide a meaningful measure of the economic performance of the regulated asset. In the case of Petrobras' vertically integrated operations, that assumption cannot be verified because the historical accounting information reflects internal allocations rather than market transactions.
- 3.4.4 Accordingly, the historical data generated during the vertically integrated period do not provide a sufficiently reliable basis for applying the RCM. The difficulty is not simply one of data availability, but of economic interpretation. Internal accounting records within a vertically integrated enterprise cannot be

assumed to replicate the commercial outcomes that would have emerged had the pipeline operated independently throughout the relevant period.

3.5 Relevance to the application of the RCM

- 3.5.1 The discussion in this chapter identifies a fundamental difficulty with the ANP's proposed application of the RCM. The methodology seeks to reconstruct historical capital recovery using revenues and costs from a period in which the pipeline business formed part of a vertically integrated enterprise. As explained above, those data cannot readily be interpreted as representing the economic performance of an independently operated pipeline business.
- 3.5.2 Consequently, the reliability of the RCM depends not only on the methodology itself, but also on the quality and economic interpretation of the underlying historical data. In my opinion, the characteristics of the Petrobras business during the relevant period mean that those data do not provide a sufficiently robust foundation for reconstructing historical capital recovery for the pipeline assets.

4 The RCM and the Principles of Modern Economic Regulation

4.1.1 This section examines the economic principles that underpin the determination of an initial RAB for price-regulated infrastructure. These principles provide the framework for assessing whether ANP's proposed application of the RCM is consistent with modern regulatory economics theory and practice.

4.2 Regulatory credibility, reasonable expectations and initial asset valuation

4.2.1 A fundamental objective in establishing an initial RAB value is to preserve the legitimate commercial expectations of both investors and customers. In practical terms, the chosen asset valuation methodology should avoid creating substantial and unexpected redistributions of wealth between the parties—a concept that Yarrow (2010) has described as avoiding a regulatory "mugging".²

4.2.2 As Yarrow explains, regulatory regimes derive their legitimacy and long-term efficiency from their credibility. Regulatory decisions that retrospectively and materially alter the commercial bargain between investors and consumers undermine that credibility and, in doing so, weaken incentives for efficient investment and efficient service provision over time.

4.2.3 Avoiding such a "mugging" is therefore in the long-term interests of both investors and consumers. While consumers may benefit from lower prices in the short term, regulatory decisions that significantly reduce investors' expected returns below reasonable expectations increase regulatory risk, raise the cost of capital and ultimately reduce incentives to maintain, expand and modernise infrastructure. The long-run consequence is lower economic efficiency and, ultimately, poorer outcomes for consumers.

4.2.4 This explains why regulatory precedent is so important when establishing an initial RAB value. A range of valuation methodologies—including historical cost and replacement cost approaches—can be consistent with economic efficiency if they are applied consistently with the regulatory framework that investors reasonably expected when committing capital. Once investments have become sunk, neither regulators nor investors should behave opportunistically by seeking to rewrite the original commercial bargain.

² Commerce Commission (2010), Input methodologies conference, Electricity Distribution Services, p.351.

- 4.2.5 Accordingly, determining an initial RAB value requires careful consideration of the reasonable expectations of both investors and consumers regarding the nature of future regulatory intervention. Protecting those expectations is central to maintaining regulatory credibility and promoting efficient long-term investment.
- 4.2.6 Against this background, the outcome produced by ANP's proposed application of the RCM is difficult to reconcile with these principles. According to the Technical Note, the NTS pipeline assets had a value of R\$3.63 billion at the beginning of 2017. The Technical Note also recognises that NTS invested a further R\$738 million in sustaining capital expenditure between 2017 and 2025. Notwithstanding these substantial investments, the ANP's application of the RCM results in an initial regulatory asset base value of zero.³ Such an outcome fundamentally undermines the principles of regulatory credibility, protection of reasonable investment expectations and efficient long-term investment that underpin modern economic regulation.

4.3 The Purpose of an Initial RAB⁴

- 4.3.1 The central objective in establishing an initial RAB value should be to promote economic efficiency, particularly efficient long-term investment in infrastructure. A range of asset valuation methodologies can be consistent with this objective, provided they preserve appropriate investment incentives and are applied consistently with the regulatory framework that investors reasonably expected when committing capital. In the presence of substantial sunk costs, the preferred methodology is therefore the one that best supports efficient investment while maintaining regulatory credibility.
- 4.3.2 An important underlying assumption in any asset valuation methodology is that the assets included in the RAB remain capable of providing regulated services safely and reliably, both now and into the future. This assumption is satisfied in relation to the NTS pipeline assets, which continue to provide transportation services in accordance with the relevant technical, operational and safety standards.
- 4.3.3 Economic efficiency also requires that regulatory depreciation reflects the remaining service potential of the regulated assets rather than simply the passage of time. Consequently, life-extending investments made before the

³ ANP, Technical Note, Section 11.5.4

⁴ These issues have been covered in detail in Synergies report titled 'Analysis of alternative asset valuation methodologies – A report prepared for NTS/TAG, 2 April 2026

commencement of formal price regulation should be recognised in establishing the initial RAB because they increase the remaining economic life and service capability of the assets. This consideration is particularly relevant to the NTS pipeline assets, given the substantial sustaining capital expenditure undertaken following their acquisition from Petrobras in 2017.

- 4.3.4 The objective of establishing an initial RAB is to create efficient incentives for future investment while allowing investors a reasonable opportunity to recover their efficient costs over the economic life of the assets. By contrast, the objective of the RCM is to reconstruct historical capital recovery. These are fundamentally different objectives. For this reason, retrospective valuation methodologies such as the RCM are generally unsuitable for establishing an initial RAB value within a forward-looking system of incentive regulation.
- 4.3.5 Similarly, determining the regulatory life of assets by reference to the duration of historical contractual arrangements, rather than to their remaining economic life and service potential, is generally inconsistent with economic efficiency and regulatory fairness, unless that approach formed part of the regulatory framework reasonably anticipated by investors before committing capital. My understanding is that is not the case in relation to the NTS pipeline assets.

4.4 Regulatory Discretion and Credible Regulatory Commitment

- 4.4.1 The establishment of an initial RAB value is one of the most significant exercises of regulatory discretion because it determines the extent to which past investments will be recognised for future pricing purposes. While some degree of regulatory discretion is unavoidable, the manner in which that discretion is exercised has important implications for regulatory risk, particularly once infrastructure investments have become sunk. Consequently, regulatory decisions concerning asset valuation materially influence investors' perceptions of the stability and credibility of the regulatory framework.
- 4.4.2 The central issue is therefore not the existence of regulatory discretion itself, but whether that discretion is exercised consistently with credible regulatory commitments. As recognised in the regulatory economics literature⁵, where investors believe that regulators may retrospectively alter the economic basis on which investments were undertaken, incentives to invest are weakened because of concerns that the returns to those investments may subsequently be

⁵ See, for example, Levy, B. and Spiller, P.T. (1994), "The Institutional Foundations of Regulatory Commitment: A Comparative Analysis of Telecommunications Regulation", *Journal of Law, Economics, & Organization*.

reduced. That is, a lack of credible regulatory commitment increases the risk of expropriation and discourages investment in infrastructure.

- 4.4.3 The Australian Productivity Commission reached a similar conclusion in its Review of the National Access Regime. It recognised that, while monopoly pricing can impose costs on consumers, inadequate investment incentives can threaten the long-term provision of infrastructure services. For that reason, the regulation of access to infrastructure should give priority to maintaining efficient investment incentives, recognising that the long-term costs of undermining investment may exceed the short-term benefits of reducing regulated prices.⁶

4.5 Regulatory Governance within the Brazilian Legal Framework

- 4.5.1 The discussion in this section is based primarily on background material, translations of relevant legislative provisions and legal opinions provided to me by NTS. I have not independently reviewed Brazilian legislation or case law and do not express an independent opinion on questions of Brazilian law. Rather, I consider these materials only to the extent that they are relevant to the economic and regulatory issues addressed in this report.
- 4.5.2 Sound regulatory governance requires that regulatory arrangements promote credibility, predictability and the long-term interests of both investors and consumers. These principles support efficient investment while maintaining confidence in the regulatory framework.
- 4.5.3 The concept of a "regulatory bargain" or "regulatory contract" reflects these objectives. It recognises that regulators must balance economic efficiency with the legitimate interests and reasonable expectations of all parties affected by regulation.
- 4.5.4 According to the materials provided to me by NTS, these principles are reflected in Article 44 of Law No. 14,134/2021 (the New Gas Law), which is discussed below.
- 4.5.5 Article 44 of Law No. 14,134/2021 (the New Gas Law) preserves contracts that were in force when the legislation came into effect by safeguarding the rights arising under those contracts. In particular, it provides that the new legislative framework should not affect the revenues earned by transporters under

⁶ Productivity Commission (2001), Review of the National Access Regime, p xix

existing contracts until their expiry, thereby preserving the economic and financial basis upon which those investments were made.

- 4.5.6 If this interpretation of Article 44 is correct, it reinforces the broader regulatory principles discussed earlier in this report. It reflects a legislative preference for prospective rather than retrospective regulatory change and seeks to preserve legal certainty and reasonable investment expectations. From an economic perspective, those principles are inconsistent with the retrospective nature of the RCM.
- 4.5.7 According to the legal opinion provided to me, this interpretation is also supported by former Justice Ellen Gracie Northfleet of the Brazilian Supreme Federal Court.⁷ She explains that Article 44 of the New Gas Law reflects a deliberate legislative choice to preserve the economic and financial basis of transportation contracts entered into under the previous regulatory framework by protecting the agreed contractual revenues until their expiry. In her opinion, the provision embodies the principles of legal certainty and regulatory stability, recognising that changes to tariff arrangements and remuneration should operate prospectively rather than retrospectively, particularly in a sector characterised by capital-intensive investments, long-lived assets and extended investment recovery periods.
- 4.5.8 The materials provided to me also indicate that the ANP itself previously recognised, in Technical Note No. 17/2020/SIM/ANP-RJ, that tariff setting is inherently a forward-looking exercise based on projected demand, costs, asset values and a reasonable return on capital. According to that Technical Note, retrospective adjustments to asset values or historical rates of return are inconsistent with international regulatory practice because they introduce temporal inconsistency into the treatment of sunk investments.
- 4.5.9 The materials further indicate that ANP Resolution No. 15/2014 established a framework for valuing regulatory asset bases for operating gas pipelines that gave preference to historical cost and replacement cost methodologies. According to NTS, these approaches have also been consistently adopted in previous ANP decisions and are being adopted by ANP to the other pipeline operators that were not privatized concurrently with RCM's approach to NTS.

⁷ Legal opinion prepared by former Justice Ellen Gracie Northfleet for NTS, which was submitted to the ANP in the context of Public Consultation No. 03/2026 and available at https://sei.anp.gov.br/sei/modulos/pesquisa/md_pesq_documento_consulta_externa.php?9LibXMqGnN7gSpLFOOgUQFziRouBJ5VnVL5b7-UrE5TBA0alq8mlGAep9mgiQFmNOdaSybS9EvzKrS_w-0iL6a-CsGIZVNYz0e3j_x-fjFTWrDkQyNTI1gdHAXqgZ6aE.

- 4.5.10 The preservation of existing contractual rights reflected in Article 44 also appears to be consistent with the broader objectives of Brazil's national energy policy. As reflected in the legislative and regulatory materials provided to me – including Law No. 9,478/1997, Decree No. 10,712/2021 and CNPE Resolution No. 03/2022 – the Brazilian regulatory framework places considerable emphasis on legal certainty, regulatory predictability, respect for contracts and the promotion of investment in natural gas transportation infrastructure. These instruments recognise that stability in remuneration rules and careful management of regulatory transitions are important prerequisites for the bankability and long-term sustainability of the sector.
- 4.5.11 From an economic perspective, these principles are entirely consistent with the discussion in the preceding sections of this report. Modern economic regulation seeks to promote efficient long-term investment by providing a stable and credible regulatory framework within which investors can reasonably expect to recover their efficient costs. To the extent that the Brazilian legislative and regulatory framework embodies these same principles, it reinforces my opinion that retrospective asset valuation methodologies such as the RCM are not an appropriate basis for establishing an initial RAB for price-regulated gas transmission pipelines.

4.6 Implications for the Application of the RCM

- 4.6.1 The analysis in this section has identified several principles that should guide the establishment of an initial regulatory asset base value for price-regulated infrastructure. These include promoting efficient long-term investment, preserving regulatory credibility and legal certainty, respecting reasonable investment expectations, and allowing investors a reasonable opportunity to recover their efficient costs over the economic life of the assets. These principles underpin modern systems of economic regulation because they are essential to maintaining efficient investment incentives and the long-term provision of infrastructure services.
- 4.6.2 In my opinion, the ANP's proposed application of the RCM is inconsistent with these principles. Its retrospective focus on reconstructing historical capital recovery differs fundamentally from the forward-looking objective of establishing an initial regulatory asset base value that supports efficient future investment. Moreover, as discussed in Section 3, the proposed application of the RCM relies on historical information generated within a vertically integrated enterprise that does not provide a reliable basis for assessing capital recovery in the pipeline business.

- 4.6.3 The outcome produced by the Technical Note illustrates these concerns. Despite the initial investment to acquire the NTS pipeline assets in 2017, and the significant sustaining capital expenditure subsequently undertaken to maintain and extend the useful life of those assets, the proposed application of the RCM results in an initial RAB value of zero. From an economic perspective, such an outcome is inconsistent with the objectives of promoting efficient investment, preserving regulatory credibility and maintaining reasonable investment expectations.
- 4.6.4 Finally, the Australian experience, described in more detail below, reinforces this conclusion. Although the RCM forms part of the National Gas Rules, it is confined to a very specific arbitration framework for non-price-regulated gas pipelines (non-scheme pipelines). It has never been adopted as a methodology for establishing the initial RAB value of price-regulated gas pipelines, nor has it been used for that purpose in any other regulated infrastructure sector in Australia, including electricity and water networks. This reflects the fundamental distinction between using the RCM as one possible benchmark in the resolution of commercial access disputes and using it to establish an initial RAB value within a forward-looking system of price regulation.

5 The RCM in Australia

5.1 Introduction

- 5.1.1 Gas transmission pipelines are the only form of regulated infrastructure in Australia in which the RCM may potentially be relevant. Even then, its role is confined to commercial arbitration of access disputes involving non-scheme (non-price-regulated) gas pipelines, which as I understand would more closely relate to the regulatory framework in Brazil applicable for gathering pipelines (*gasodutos de escoamento*).
- 5.1.2 It has never been used to establish the initial RAB value for a price-regulated pipeline, including under the current National Gas Rules, which do not permit its use when the RAB value is established at the commencement of price regulation. Where pipelines have become subject to price regulation for the first time, the initial RAB value has generally been established using the Depreciated Actual Cost (DAC) or Depreciated Optimised Replacement Cost (DORC) methodologies.
- 5.1.3 The RCM has only been applied once in an access dispute arbitration decision in 2021 and was rejected in the only other access dispute arbitration where it was considered for use in 2018.

5.2 Why was the RCM developed in Australia

- 5.2.1 The RCM was developed as part of reforms to the Australian gas pipeline regulatory framework during the period in which Australia distinguished between price-regulated pipelines and pipelines that were not subject to price regulation. At that time, price-regulated pipelines were subject to conventional building-block regulation administered by an economic regulator, whereas non-regulated pipelines relied primarily on commercial negotiation with access seekers/users.
- 5.2.2 In its inquiry into Australia's east coast gas market, the Australian Competition and Consumer Commission (ACCC) expressed concern that some non-price-regulated pipelines possessed sufficient market power to earn returns that exceeded those expected in a competitive market. The ACCC suggested that these pipelines may have already recovered a substantial proportion of their capital costs and recommended reform of the regulatory framework.⁸

⁸ Inquiry into the east coast gas market, ACCC, April 2016, p92

- 5.2.3 Following a subsequent review⁹, Australia adopted a negotiate-arbitrate framework for non-price-regulated pipelines rather than extending conventional price regulation. The framework combined enhanced information disclosure in relation to pipelines' price and non-price access terms, with commercial arbitration to resolve disputes between pipeline operators and users.
- 5.2.4 In developing the arbitration framework, the Gas Market Reform Group (GRMG) concluded that the objective of arbitration should be to produce outcomes consistent with those expected in a workably competitive market. To assist arbitrators in considering whether historical capital recovery was relevant to that assessment, the GRMG developed the RCM as one of the asset valuation methodologies available to an arbitrator. Although the arbitrator is specifically required to consider the RCM, it is neither mandatory nor determinative. Any methodology adopted by the arbitrator must ultimately support the overarching objective of replicating the outcomes of a workably competitive market.
- 5.2.5 Accordingly, the role of the RCM within the Australian regulatory framework is both specific and limited. It applies only to commercial arbitration involving non-scheme pipelines and has never been used to establish the initial regulatory asset base value for a price-regulated pipeline. Moreover, if an arbitrator were to apply the RCM, it must be applied in accordance with the methodology prescribed in the National Gas Rules rather than as part of a hybrid valuation approach.

5.3 Implications of the Australian experience with the RCM

- 5.3.1 The Australian experience demonstrates that the role of the RCM is both narrow and carefully constrained. In the context of commercial arbitration involving non-scheme pipelines, the overriding objective is to achieve an outcome consistent with a workably competitive market. The RCM may assist an arbitrator in achieving that objective, but only where its application is appropriate in the circumstances of the particular dispute. The following three aspects of the Australian framework are particularly relevant to ANP's proposed application of the RCM.
- actual historical costs
 - no application to price-regulated pipelines

⁹ Examination of the current test for the regulation of gas pipelines - Final Report, Michael Vertigan December 2016

- application to individual pipelines.

Actual historical costs

- 5.3.2 First, the Australian RCM is based on actual historical investment costs rather than replacement costs or hypothetical asset values. The methodology was developed to assess the recovery of actual capital invested in an individual pipeline over time.
- 5.3.3 As recognised by the GRMG¹⁰, concerns regarding historical capital recovery could only be addressed if the analysis commenced with the actual construction cost of the relevant pipeline and subsequently accounted for new capital expenditure and capital recovered through prices. This precludes the use of hybrid approaches that combine actual historical costs with hypothetical replacement cost valuations.

No application to price-regulated pipelines

- 5.3.4 Second, the RCM has never been used in Australia to establish the initial RAB value or to inform price-setting for regulated gas pipelines. Its application is confined to commercial arbitration involving non-scheme pipelines.
- 5.3.5 This distinction is fundamental. The Australian Energy Regulator (AER), which performs a role broadly equivalent to the ANP in relation to regulated pipelines, is prohibited from using RCM in its regulatory price setting. Indeed, the AER has been critical of the RCM concept.¹¹ Consequently, there is no Australian precedent for applying the RCM in the manner proposed by the ANP.
- 5.3.6 The Australian experience therefore demonstrates that the RCM was developed as a narrowly defined analytical tool for potentially resolving specific commercial disputes. It was not designed, and has never been applied, as a methodology for establishing the initial regulatory asset base value of a price-regulated pipeline.

Application to individual pipelines

- 5.3.7 Third, the onetime where the RCM was applied in Australia, it applied to an individual pipeline rather than across an integrated pipeline system.

¹⁰ Gas Pipeline Information Disclosure and Arbitration Framework, Final Design Recommendation, June 2017, GRMG, p 75

¹¹ Explanatory note: Pipeline Information Disclosure Guidelines – October 2023, AER, p 6

- 5.3.8 Applying the RCM at the level of an integrated pipeline system, rather than to individual pipelines, is inconsistent with the methodology's underlying logic. The analysis first requires transportation revenues to be attributed to the individual pipelines providing the contracted service. Furthermore, any negative value calculated for one pipeline should not reduce the value of other economically distinct pipeline assets. These issues are avoided when the RCM is applied on a pipeline-by-pipeline basis, consistent with Australian practice.

5.4 Factual Inaccuracies in the Technical Note

- 5.4.1 The Technical Note contains several statements regarding the origin and application of the RCM in Australia that, in my opinion, do not accurately reflect the Australian regulatory framework. These factual inaccuracies are relevant because they appear to support the Technical Note's conclusion that the RCM is an appropriate methodology for establishing the initial RAB value of a price-regulated pipeline.
- 5.4.2 In particular, the Technical Note identifies the AER as the originator of the RCM.¹² That is not correct. The RCM was developed by the GRMG, an Australian Government policy body established to develop reforms addressing concerns about the exercise of market power by non-scheme gas pipelines.¹³ Moreover, the AER has never applied the RCM in establishing prices for regulated pipelines. The AER has criticised the approach and in any event the National Gas Rules do not permit it to use the approach. Under the Australian framework, the RCM may only be considered by an independent commercial arbitrator in the context of an access dispute involving a non-scheme pipeline.
- 5.4.3 The significance of this factual error extends beyond the institutional history of the RCM. It appears to support the incorrect inference that the RCM forms part of Australia's regulatory approach to setting prices for scheme pipelines subject to price regulation administered by the AER.
- 5.4.4 Rather, the RCM was developed as one possible analytical tool to assist a commercial arbitrator in resolving commercial access disputes involving non-scheme pipelines that are not subject to price regulation. Consistent with that limited role, the AER has recognised that the RCM may produce asset values that are inconsistent with the relevant valuation objective and has expressed a

¹² Technical Note at items 1 and 2.4

¹³ Gas pipeline information disclosure and arbitration framework final design, Final Recommendation, June 2017

preference for historical-cost-based valuation methodologies.¹⁴ The AER has also cautioned against using valuation methodologies like the RCM that are highly sensitive to inputs and assumptions or that derive asset values from revenue streams because they may produce unreliable or circular valuation outcomes.

¹⁴ Explanatory note: Pipeline Information Disclosure Guidelines – October 2023, AER, p 20

6 Concluding observations

- 6.1.1 In my opinion, the ANP's proposed application of the RCM to establish the initial RAB value for NTS' regulated gas pipeline system is inconsistent with well-established principles of modern economic regulation. In particular, it is difficult to reconcile with the objectives of promoting regulatory certainty, preserving the credibility of the regulatory framework, and allowing regulated businesses a reasonable opportunity to recover their efficient costs.
- 6.1.2 The Australian experience does not support the use of the RCM in the manner proposed by ANP. The RCM was developed for a fundamentally different purpose: to assist an independent arbitrator in resolving commercial access disputes involving non-scheme pipelines. It has never been used in Australia to establish the initial RAB value of a price-regulated pipeline or as part of a general regulatory price-setting process.
- 6.1.3 The ANP's proposed application of the RCM also differs substantially from the manner in which the methodology was developed and may be applied in Australia. As discussed in this report, the Australian framework confines the RCM to a narrowly defined arbitration context, applies it to individual pipelines rather than integrated pipeline systems, and relies on actual historical investment costs. By contrast, the ANP proposes to apply the RCM as the basis for establishing the initial regulatory asset base value of a price-regulated pipeline system, relying on historical information generated within a vertically integrated enterprise. These differences are fundamental and, in my opinion, materially affect the relevance of the Australian experience to the ANP's proposed approach.