Annual Pricing Process Review

Position Paper – Stage 2

August 2022

AUSTRALIAN ENERGY REGULATOR

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Contents

About us

We, the Australian Energy Regulator (AER), work to make all Australian energy consumers better off, now and in the future. We are the independent regulator of energy network service providers (NSPs) in all jurisdictions in Australia except for Western Australia. We set the revenue requirements these NSPs can recover from customers using their networks.

The National Electricity Law and Rules (NEL and NER) and the National Gas Law and Rules (NGL and NGR) provide the regulatory framework which govern the NSPs. Our role is guided by the National Electricity and Gas Objectives (NEO and NGO).

NEO:[1]

> …to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers of electricity with respect to:
>
> (a) price, quality, safety, reliability, and security of supply of electricity; and
>
> (b) the reliability, safety, and security of the national electricity system.

NGO:[2]

> …to promote efficient investment in, and efficient operation and use of, natural gas services for the long-term interests of consumers of natural gas with respect to price, quality, safety, reliability, and security of supply of natural gas.

The decisions we make and the actions we take affect a wide range of individuals, businesses, and organisations. Effective and meaningful engagement with stakeholders across all our functions is essential to fulfilling our role, and it provides stakeholders with an opportunity to inform and influence what we do. Engaging with those affected by our work helps us make better decisions, provides greater transparency and predictability, and builds trust and confidence in the regulatory regime. This is reflected in our *Stakeholder engagement framework* and in the consultation process we are following.[3]

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1 NEL, s. 7.

2 NGL, s. 23.

3 AER, *Revised stakeholder engagement framework*, September 2017.

1 Introduction

In August 2021, we initiated a review into improving our annual pricing process for electricity distribution network service providers (distributors). The aim of the review is to develop a process to facilitate more timely and accurate annual pricing approvals as well as improve the presentation of pricing outcomes for stakeholders. This paper initiates the second stage of this review.

In the first stage, we engaged with distributors to develop a better process for our assessment of annual pricing proposals for years 2 to 5 of the regulatory control period (second half of 2021). The key outcomes were the development of a formal pre-lodgement engagement process and standardised pricing models (see section 4 for further discussion).

The second stage (second half of 2022) will build on the outcomes of the first stage. In this stage we will engage all stakeholders to improve the presentation of annual pricing outcomes for their processes, such as the data for setting retail prices or developing default offers. We will also engage on refinements to improve the transparency of pricing proposals.

As we prepare for the upcoming round of regulatory determinations,[4] this second stage will also include:

- consideration of improvements to the initial pricing process for the first year of a regulatory period, and
- a standardised approach to the application of the side constraint mechanism in regulatory determinations.

The development of these aspects for the annual pricing process follows our commitment in the AER Strategic Plan 2020–2025 to design our systems to work in ways that deliver efficient regulation of monopoly infrastructure.[5]

In this second stage, we expect to finalise the standardised annual pricing model templates to be used for the 2023–24 annual pricing process and beyond. We also expect to improve the timing for submitting and assessing pricing proposals for the first year of the regulatory control period and develop a position on the application of the side constraint mechanism to be considered further through the 2024–29 regulatory determinations.

This paper sets out the AER's initial position on these issues. We are seeking feedback on the positions set out in this paper.

The key timelines for this stage of the review are set out below. We expect to publish a final position paper of the review in December.

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4 Ausgrid – Determination 2024–29; Endeavour Energy – Determination 2024–29; Essential Energy – Determination 2024–29; Evoenergy – Determination 2024–29; Power and Water Corporation – Determination 2024–29; TasNetworks – Determination 2024–29.

5 AER, *AER strategic plan 2020–2025*, December 2020, p.9

2 Invitation for submissions

Written submissions from interested stakeholders are invited by 2 September 2022. We will consider all submissions received by that date. Submissions should be in Adobe portable document format, Microsoft Word document format, or another machine-readable document format. Please address submissions to:

AERPricing@aer.gov.au

Warwick Anderson
General Manager – Network Pricing
Australian Energy Regulator

We prefer that all submissions are publicly available to facilitate an informed and transparent consultative process. Submissions will be treated as public documents unless otherwise requested. All non-confidential submissions will be placed on our website. Parties wishing to submit confidential information should:

- Clearly identify the information that is the subject of the confidentiality claim; and
- Provide a non-confidential version of the submission in a form suitable for publication.

We have highlighted areas throughout the paper where we have identified opportunities for feedback. Submissions need not address all highlighted areas or questions, and we encourage other general feedback in addition to these highlighted areas.

Where appropriate, we will also consider verbal submissions via online meetings. Please email the above mailbox to arrange.

Consultation process

The consultation process will first seek submissions from interested parties followed by two workshops where stakeholders will have a further opportunity to put forward their views. We will set the agendas for the workshops based on views and themes presented in submissions.

Following our consideration of stakeholder feedback, we will develop:

- a position on the standardised application of the side constraint mechanism to be applied in the upcoming regulatory determinations (by end of October)
- a final position and pricing models (by end of December).

Table 1 Indicative timeline

Key steps	Indicative dates
Publish position paper	1 August 2022
Submissions due	2 September 2022
Stakeholder workshop 1	21 September 2022
Stakeholder workshop 2	27 September 2022
Position on side constraint mechanism	By end of October 2022
Publish final position paper and pricing models	By end of December 2022

3 Background

Each year, the electricity distributors submit to us for approval the electricity network and alternative control service prices they propose to charge consumers for the upcoming regulatory year. We approve a pricing proposal if:

- it is compliant with the requirements of the NER, the applicable distribution determination and tariff structure statement, and
- all forecasts associated with the proposal are reasonable.

We must approve pricing proposals within constrained legislative timelines:

- as soon as practicable for pricing proposals in the first year of a regulatory control period
- within 30 business days from the date of receipt of annual pricing proposals in all other years of a regulatory control period.

We have historically required several resubmissions from each distributor to achieve a pricing proposal that is compliant and capable of approval. This has resulted in a resource-intensive process on a constrained timeline.

Adding to these pressures is the importance of timely approvals for stakeholders:

- Distributors – to implement prices in billing systems and communicate prices to retailers and consumers
- AER – to meet our obligations under the NER (approve pricing proposals within 30 business days of receipt) and to develop Default Market Offers
- Retailers – to input into retail prices and meet their obligations under the Prohibiting Energy Market Misconduct (PEMM) Act
- State regulators – as part of jurisdictional regulation or other process, or, in the case of the Essential Services Commission, to develop Victorian Default Offers
- Consumers – Default Market Offers and retail offerings that accurately reflect approved network prices, rather than indicative prices.

Side constraint mechanism

One of the NER requirements is that pricing proposals must demonstrate compliance with the side constraints on distribution tariffs for standard control services.[6] The side constraint limits how much revenue can be recovered from a tariff class (a class of customers) relative to the revenue recovered from the same tariff class in the preceding year.

Historically, distributors have used differing interpretations in applying the side constraint mechanism in their pricing proposals. In recent years some interpretations of the side constraint mechanism have produced adverse outcomes in some situations, to the extent of limiting overall revenue recovery where significant declining quantities are experienced.

6 NER, cl. 6.18.6.

4 What have we done so far? (Stage 1)

In December 2021 we published a final position paper to complete the first stage of the annual pricing process review. The outcome of the first stage included development of:

- A formalised pre-lodgement engagement process; and
- Standardised pricing model templates.

This pre-lodgement engagement process and standardised pricing models are intended to streamline the annual pricing process, automate analysis, and present more relevant outputs for all stakeholders. These factors would increase the likelihood of distributors submitting proposals that are compliant and capable of being approved in the first instance.

Further detail on the reasons for this review, the outcomes of the first stage and areas for further investigation, is available on our website, here.

The recent 2022–23 annual pricing process was used to implement the pre-lodgement engagement process and standardised pricing model templates developed in stage 1 of this review.

4.1 Pre-lodgement engagement

The pre-lodgement engagement process assists in streamlining the formal pricing approval process as it allows early engagement on key elements of pricing proposals that are known with some certainty. These include forecast quantities, alternative control service prices, components of unders/overs accounts, and other significant cost drivers such as pass throughs. The process also provides opportunity for distributors to engage with us on material issues they are aware of in the upcoming submission.

This early engagement reduces the impost on our and distributor resources within the formal timelines, by reducing the time we require to review proposals and the amount of engagement with distributors on these issues once formally submitted. In our experience, we observe benefits for the distributors in receiving less information requests from us and fewer resubmissions of proposals.

Additionally, we introduced a role for us to initiate the pre-lodgement engagement process by providing the distributors with the standardised model template with pre-filled inputs. This approach allows the distributor to undertake a quality assurance of the inputs that we have input prior to submission.

4.2 Standardised models

We consider the standardised pricing models allow:

- pre-filling of known data to confirm inputs prior to submission
- increased automation in analysis and production of outputs
- consistency and familiarity with the models for us and stakeholders
- assurance over compliance demonstrations and calculations within models
- reduced risk of errors.

5 What's next? (Stage 2)

This paper initiates the second stage of the annual pricing process review. This second stage will include:

- Engaging with stakeholders on their use of the data and outputs within the pricing proposal models
- Engaging with stakeholders on the content and presentation of pricing proposals
- Revising the models to better suit stakeholder needs as addressed above, to fix errors identified in the 2022–23 process, and to improve automated compliance checks and analysis
- Considering opportunities to provide timelier pricing approvals in the first year of the regulatory control period
- Establish a position on the application of the side constraint mechanism to be consistently applied through the upcoming 2024–29, 2025–30, and 2026–31 regulatory determinations.

5.1 Stakeholder usage of outputs

We intend to revise the standardised pricing models to highlight and provide important data and outputs that are regularly used by other stakeholders.

In developing the standardised pricing models, we engaged only with distributors in Stage 1 to prioritise the functionality of the models in relation to compliance reviews. We introduced some consistent analysis and outputs to the model based on our own uses, including cost movement analysis and output charts.

We understand many stakeholders use the data in pricing models to assist in their own functions, such as preparing default offers, reporting on network performance, retail price notifications, and for their own compliance purposes. This data may be approved network prices, indicative network prices, cost movement analysis, revenue adjustments, revenue true-up mechanisms, and more.

We are also aware of the reliance from stakeholders on some of the analysis and discussion that we produce in the approval of pricing proposals.

Stakeholders often need to engage with the AER to seek assistance in navigating pricing proposals and models during and after the annual pricing process. This can be quite burdensome and not as timely as stakeholders may expect and is burdensome and resource intensive for the AER. We would like to explore the opportunities to develop the pricing models further to allow for stakeholders to interact directly with the models and reduce the reliance on AER staff.

The v1.1 pricing models that were used for the 2022–23 pricing process are provided as Attachment A and Attachment B with this position paper for consideration (these were updated since publishing v1.0 in December 2021). We expect to produce new versions of the pricing models in December 2022 to incorporate feedback from this process, and to make other revisions as flagged in the following sections.

Opportunities for feedback

We are seeking an understanding of stakeholders' usage of data and outputs from the pricing proposals. We are interested in the following:

- What data or outputs do you currently use from pricing proposals and/or models?
- What data or outputs do you think should be obtainable from pricing proposals and/or models that aren't currently available (noting data and outputs should be related to the compliance exercise being undertaken)?
- Is the current presentation of relevant data and outputs in v1.1 models appropriate and accessible? If not, what could be changed?
- What functionality would you like to see in the model to allow for your own analysis (e.g., in v1.1 models we included mechanisms to allow users to manually enter their own consumption profiles for calculating network costs)?
- What data should be presented in default cost movement outputs charts in the model that are used for AER communications (noting we published different charts in the 2022–23 Statement of Reasons than those presented in the models, and have published different charts in recent years)?
- What other output charts should be available within the models?

We encourage more general feedback beyond these questions. We also encourage any feedback on elements of the first stage (pre-lodgement engagement, standardised pricing models) or experience from the 2022–23 pricing process (timing, models usage) from all stakeholders.

5.2 Pricing proposal content and presentation

In the first stage of this review, we flagged an opportunity to standardise the pricing proposal documents. This is in line with the standardisation of the models, as well as standardisation work in relation to the tariff structure statements.

We intend to consider developing standardised templates for the pricing proposal documents to streamline compliance reviews. This includes:

- Developing standardised compliance templates for tariff structure compliance
- Reducing/removing replication of data where possible by increasing reliance on outputs in the model
- Differentiating content intended to demonstrate compliance with content intended for consumers and other stakeholders.

These standardised templates provide an opportunity to streamline our reviews and make pricing proposals more transparent and accessible. It also provides the opportunity for distributors to create more accessible customer-facing documents that are not complicated by compliance requirements and not for our review. This contrasts with the current approach of having customer-facing content and compliance content in the same documents.

Opportunities for feedback

We are seeking feedback on our suggestion to develop standardised pricing proposal document templates. We are interested in the following:

- What data or outputs do you currently use from pricing proposals that may not be present in pricing proposal models?
- Is it appropriate for proposed tariffs to be wholly located within the pricing model for the purpose of compliance reviews, and for customer-facing tariff tables to be published without AER review?
- Is it appropriate for the distributor to produce customer-facing pricing proposal documents (including network tariff tables) that are not reviewed by the AER?
- Is it appropriate for customer-facing pricing proposal documents to be published only by the distributor or should the AER also publish these?

We encourage more general feedback beyond these questions. We intend to set a position on whether we will pursue developing standardised pricing proposal document templates when we conclude this Stage 2 process in December 2022. However, development of these standardised document templates or expectations may not progress until 2023.

5.3 Model revisions

We intend to revise the standardised pricing models to correct for errors encountered in the 2022–23 pricing process, as well as to further develop functionality of certain components of the model.

In revising the models, we intend to:

- Further develop cost movement analysis
    - Ensure manually entered consumption profiles interact correctly with block tariffs
    - Ensure correct functionality for controlled load tariffs
    - Better draw out controlled load data
    - Add functionality for demand charging components
    - Revise cost movement output charts
- Consider an extra ‘control’ worksheet
    - Ability for distributors to adjust proposed prices using this worksheet
    - Ability to apply blanket movements against similar charging components or tariffs
    - Provides detail on movements in prices for each charging component
- Consider an extra worksheet to produce detailed data for use in databases or similar
- Add functionality for prices and mechanisms for multiple jurisdictional schemes
- Add analysis on consumption forecasts and movements
- Review the interaction of trial tariffs with compliance mechanisms
- Review formulae throughout the models and simplify where possible (e.g., removing INDEX/MATCH functionality as they may not work where tariff names are duplicated across tariff classes)

- Consider revising how inputs are grouped and/or displayed
- Explore opportunities to automate version control and/or identifying updated data
- Develop more automated checks and validations within the models
- Add more descriptive labelling where relevant
- Develop a thorough compliance report to be relied on in compliance reviews.

Opportunities for feedback

We are seeking feedback on our suggested revisions to the standardised pricing models. Actioning all elements of the above list, as well as considering revisions related to stakeholder usage (section 5.1), may require prioritising some elements – we would encourage feedback on what should be prioritised. We also encourage suggestions for revision that have not been listed.

We are also seeking feedback more generally on:

- Other opportunities that may exist for automation that will improve data validation and reduce data input errors, and
- Tools and/or technology solutions that may further streamline the exchange of information.

5.4 Year 1 pricing

We propose to introduce a formal pre-lodgement engagement process between the AER and electricity distributors to develop a better process for assessing initial pricing proposals for the first year of a regulatory control period.

Currently distributors are required to submit pricing proposals within 15 business days of the AER making a final determination, and then for the AER to approve such proposals as soon as possible. This generally results in pricing proposals being approved in mid-June. This in turn means default offers may not incorporate these approved prices, and retail price notifications may be delayed.

We believe there is an opportunity for us to apply the pre-lodgement engagement process in the first year of a regulatory period. Combining this with the standardised pricing models and the AER pre-filling models, we consider that submission of pricing proposals and subsequent approval may be possible on a similar timeline to other years.

We consider the largest variations from the established pre-lodgement engagement process would be:

- The AER's provision of final inputs in March would include embargoed data ahead of the publication of the final determinations, including:[7]
    - Any revisions to tariff structures
    - Final alternative control services price caps
    - Year 1 allowed revenues

[7] This timeline reflects the change in averaging periods in the Draft 2022 Rate of Return Instrument available here.

    - Weighted average cost of capital
    - Incentive scheme outcomes (if not already provided)
    - Any other relevant data
- The distributor submits the formal pricing proposal upon the publication of the final determination, with the AER reviewing and approving by mid-May.

We consider the above process is possible within the current framework set out in the NER. We do not consider any rule changes are necessary to accommodate this process.

Opportunities for feedback

We are seeking feedback on our suggested process for first-year pricing. We are interested in views on the following:

- Any issues present in applying the established pre-lodgement engagement process
- Proposed timelines for submission and approval
- The availability of data at relevant points in the timeline
- Whether this timeline produces unreasonable burden or resourcing constraints
- Other suggestions that could improve this process.

While we do not intend to consider proposing any rule changes to implement the suggested approach, we encourage feedback on whether this issue may be better addressed through a rule change. A rule change may include such things as shifting regulatory determination timelines forward by 1-2 months, formally setting prices within the final determination, or allowing a formal pricing proposal submission prior to the making of the final determination for approval and publication with the final determination.

5.5 Side constraint mechanism

We propose to revise the side constraint mechanism to ensure it is consistently applied for all distributors and does not conflict with any other mechanism. This is intended to properly protect consumers in different tariff classes from undue price volatility resulting from tariff structure changes, while allowing distributors to recover allowed revenues.

Currently, distributors have different interpretations and applications of the side constraint mechanism as set out in AER regulatory determinations. In recent years, we encountered issues with the current side constraint mechanism conflicting with the revenue cap mechanism and/or tariff structure statements. One instance restricted a distributor from recovering their allowed revenues under certain interpretations of the mechanism.

We acknowledge that the side constraint mechanism is a technically complex mechanism, and some stakeholders may need assistance in navigating this mechanism and our position. If assistance is required, please reach out directly to the team at AERPricing@aer.gov.au.

We have developed a position that:

- Adds a Q factor to account for the effect changes in quantities have on prices because of the revenue cap control mechanism

- Adds a D factor to adjust the CPI-X+2% allowance to the common base (total sum of products of current year prices and forecast year quantities)
- Sets a single mechanism to be applied in all distributors' determinations to ensure consistent interpretation and application
- Makes the control formula more accessible.

An explanation of the Q factor and the interpretation of 'incremental' revenue is provided in section 3 of a technical paper by our consultant, Argyle Consulting. This technical paper is available as at Attachment C, on our website here.

This technical paper also provides an explanation of the D factor (referred to as $share_{AAR_{t-1}}$) as it applies to the $(1 + \Delta CPI_t)(1 - X_t)$ movement in the adjusted annual revenue requirement (**AAR**) between years. The paper does not include it in the final formulae, as to maintain the $(1 + \Delta CPI_t)(1 - X_t)(1 + 2\%)$ form in the NER. We have considered this further and propose to apply the D factor to the entire $(1 + \Delta CPI_t)(1 - X_t)(1 + 2\%)$ part of the formula. We consider this provides better outcomes and accuracy than omitting this factor completely. This is particularly relevant in quantity movements – the omission of the D factor will provide tighter thresholds when quantities are decreasing, which in extreme circumstances may prevent a distributor from recovering all its allowed revenue.

The technical paper also provides for a factor ($share_{new\ tariffs}$) to account for new tariffs and trial tariffs. We consider this adjustment is not necessary. Where new tariffs or trial tariffs are introduced in years 2-5 of the regulatory control period (when side constraints apply), revenue generally moves within the tariff class as customers move from existing tariffs to new tariffs. Any impact of quantities moving from existing tariffs to new tariffs should be captured by the Q factor. Any new customers coming on to new or trial tariffs will be absorbed in the same way new customers on existing tariffs are absorbed into tariff class revenue.

In developing our position, we have developed two possible scenarios. Our proposed application uses a similar approach to that currently used, where the permissible percentage incorporates the base $(1 + \Delta CPI_t)(1 - X_t)(1 + 2\%)$ threshold and adds on other factors for annual adjustments, the Q factor, and the D factor. The weighted average price movements for each tariff class are then compared to this permissible percentage.

The alternate approach that we have developed looks to deliver on an alternative interpretation of the NER, while making the side constraint mechanism more transparent. This is done by limiting the permissible percentage to the base $(1 + \Delta CPI_t)(1 - X_t)(1 + 2\%)$ threshold prescribed in the NER. The weighted average price movements for each tariff class are then discounted for the annual adjustments, the Q factor, and the D factor in line with the NER's wording of disregarding the recovery of revenue relating to variations and adjustments. These adjustments are made equally across tariff classes.

In both approaches, we have developed a set of formulae to make the mechanism more accessible. This has included consolidating the I, C, and B incremental revenue factors into a single AA factor. These sets of price control formulae for the proposed and alternate applications are provided at Appendix A.

Appendix B provides some examples of the proposed side constraint mechanism under different scenarios. This appendix is supported by Attachment D, available on our website here, which provides worked examples for each scenario in an Excel workbook.

Opportunities for feedback

We are seeking feedback on our suggested revisions to the application of the side constraint mechanism, to be applied in the upcoming distribution determinations. We are interested in the following:

- Is the definition of incremental revenues that we intend to use appropriate?
- Does the Q factor appropriately account for changes in quantities from year-to-year?
- Is our proposed position on new and trial tariffs appropriate, or should a bespoke adjustment be present to account for these tariffs?
- Is the alternate application of the side constraint mechanism appropriate, and is it a preferred approach?
- Are the formulae and definitions appropriate, easy to interpret, and accessible?
- Are there any scenarios that have not been tested that should be considered?
- Are there any other issues that are not addressed and should be considered?

We encourage more general feedback beyond these questions. While we are initially looking to ensure the current mechanism is fit for purpose, we may consider broader aspects in future reviews, including the relevance/necessity for the mechanism. However, resolving these broader questions may require changes to the NER.

Appendix A – Side constraint mechanism price control formulae

Figure 1 Proposed side constraint mechanism price control formulae

	Equation
1.	$$PP_t \geq \frac{SCR_t}{SCR_{t-1}}$$
2.	$$PP_t = \left((1 + \Delta CPI_t) \times (1 - X_t) \times (1 + 2\%) - 1\right) \times D_t + AA_t + Q_t + 1$$
3.	$$SCR_t = \sum_{i=1}^{m} \sum_{j=1}^{n} p_t^{ij} q_t^{ij}$$
4.	$$SCR_{t-1} = \sum_{i=1}^{m} \sum_{j=1}^{n} p_{t-1}^{ij} q_t^{ij}$$
5.	$$D_t = \frac{AAR_{t-1}}{SCR_{t-1}}$$
6.	$$AA_t = \frac{(I_t + C_t + B_t) - (I_{t-1} + C_{t-1} + B_{t-1})}{SCR_{t-1}}$$
7.	$$Q_t = \left(\frac{TAR_{t-1}}{SCR_{t-1}} - 1\right)$$

where each tariff class has “n” tariffs, with each up to “m” components, and where:

Variable	Definition
PP_t	Is the permissible percentage for year t, calculated as per formula 2 above.
SCR_t	Is the side constraint revenue for year t, calculated as the sum of the products of proposed prices and forecast quantities for year t, calculated as per formula 3 above.
SCR_{t-1}	Is the side constraint revenue for year t-1, calculated as the sum of the products of prices charged for year t-1 and forecast quantities for year t, calculated as per formula 4 above.
ΔCPI_t	Is the annual percentage change in the ABS CPI All Groups, Weighted Average of Eight Capital Cities from the December quarter in year t-2 to the December quarter in year t-1, calculated using the following method: $$\frac{CPI_{t-1}}{CPI_{t-2}} - 1$$
X_t	Is the X factor for each year of the regulatory control period as determined in the post-tax revenue model, and annually revised for the return of debt update. If X>0, then X will be set equal to zero for the purposes of the side constraint formula.
2%	Is the additional threshold defined in the NER.
D_t	Is the adjustment made to the base threshold to create a common base, calculated as per formula 5 above.
AA_t	Is the annual percentage change in the sum of all annual adjustments factors (I, C, and B factors). This is calculated by dividing the total incremental revenues (the difference between the factors used in the total annual revenue formula for regulatory year t and t-1) by the expected

	revenues for year t-1 (SCR_{t-1}). For the avoidance of doubt, the B factor for t-1 should be equal to that used to calculate t-1 revenue in the previous pricing proposal and should not be updated for movements in the unders/overs accounts in the year t pricing proposal. This calculation is provided at formula 6 above.
p_t^{ij}	Is the proposed price for component 'j' of tariff 'i' for year t.
p_{t-1}^{ij}	Is the price charged for component 'j' of tariff 'i' for year t-1.
q_t^{ij}	Is the forecast quantity for component 'j' of tariff 'i' for year t.
AAR_{t-1}	Is the adjusted annual revenue requirement for year t-1, as used in the revenue cap price control formulae in the preceding and current years.
Q_t	Is the adjustment made each year to account for changes in quantities from the preceding year. The Q factor calculation is provided at formula 7 above.
TAR_{t-1}	Is the total allowable revenue for year t-1, calculated using the revenue cap control formula in the preceding year.
t	Is the forecast regulatory year.

Figure 2 Alternate side constraint mechanism price control formulae

	Equation
1.	$$PP \geq \frac{\left(\frac{SCR_t}{SCR_{t-1}} - AA_t - Q_t\right) - 1}{D_t} + 1$$
2.	$$PP = (1 + \Delta CPI_t)(1 - X_t)(1 + 2\%)$$
3.	$$SCR_t = \sum_{i=1}^{m}\sum_{j=1}^{n} p_t^{ij} q_t^{ij}$$
4.	$$SCR_{t-1} = \sum_{i=1}^{m}\sum_{j=1}^{n} p_{t-1}^{ij} q_t^{ij}$$
5.	$$AA_t = \frac{(I_t + C_t + B_t) - (I_{t-1} + C_{t-1} + B_{t-1})}{SCR_{t-1}}$$
6.	$$Q_t = \left(\frac{TAR_{t-1}}{SCR_{t-1}} - 1\right)$$
7.	$$D_t = \frac{AAR_{t-1}}{SCR_{t-1}}$$

where each tariff class has "n" tariffs, with each up to "m" components, and where:

Variable	Definition
PP_t	Is the permissible percentage for year t, calculated as per formula 2 above.
SCR_t	Is the side constraint revenue for year t, calculated as the sum of the products of proposed prices and forecast quantities for year t, calculated as per formula 3 above.

SCR_{t-1}	Is the side constraint revenue for year t-1, calculated as the sum of the products of prices charged for year t-1 and forecast quantities for year t, calculated as per formula 4 above.
AA_t	Is the annual percentage change in the sum of all annual adjustments factors (I, C, and B factors). This is calculated by dividing the total incremental revenues (the difference between the factors used in the total annual revenue formula for regulatory year t and t-1) by the expected revenues for year t-1 (SCR_{t-1}). For the avoidance of doubt, the B factor for t-1 should be equal to that used to calculate t-1 revenue in the previous pricing proposal and should not be updated for movements in the unders/overs accounts in the year t pricing proposal. This calculation is provided at formula 5 above.
Q_t	Is the adjustment made each year to account for changes in quantities from the preceding year. The Q factor calculation is provided at formula 6 above.
D_t	Is the adjustment made to the base threshold to create a common base, calculated as per formula 7 above.
ΔCPI_t	Is the annual percentage change in the ABS CPI All Groups, Weighted Average of Eight Capital Cities from the December quarter in year t-2 to the December quarter in year t-1, calculated using the following method: $\frac{CPI_{t-1}}{CPI_{t-2}} - 1$
X_t	Is the X factor for each year of the regulatory control period as determined in the post-tax revenue model, and annually revised for the return of debt update. If X>0, then X will be set equal to zero for the purposes of the side constraint formula.
2%	Is the additional threshold defined in the NER.
p_t^{ij}	Is the proposed price for component 'j' of tariff 'i' for year t.
p_{t-1}^{ij}	Is the price charged for component 'j' of tariff 'i' for year t-1.
q_t^{ij}	Is the forecast quantity for component 'j' of tariff 'i' for year t.
TAR_{t-1}	Is the total allowable revenue for year t-1, calculated using the revenue cap control formula in the preceding year.
AAR_{t-1}	Is the adjusted annual revenue requirement for year t-1, as used in the revenue cap price control formulae in the preceding and current years.
t	Is the forecast regulatory year.

Appendix B – Scenario examples

Attachment B provides worked examples for the scenarios explained below in Table 2.

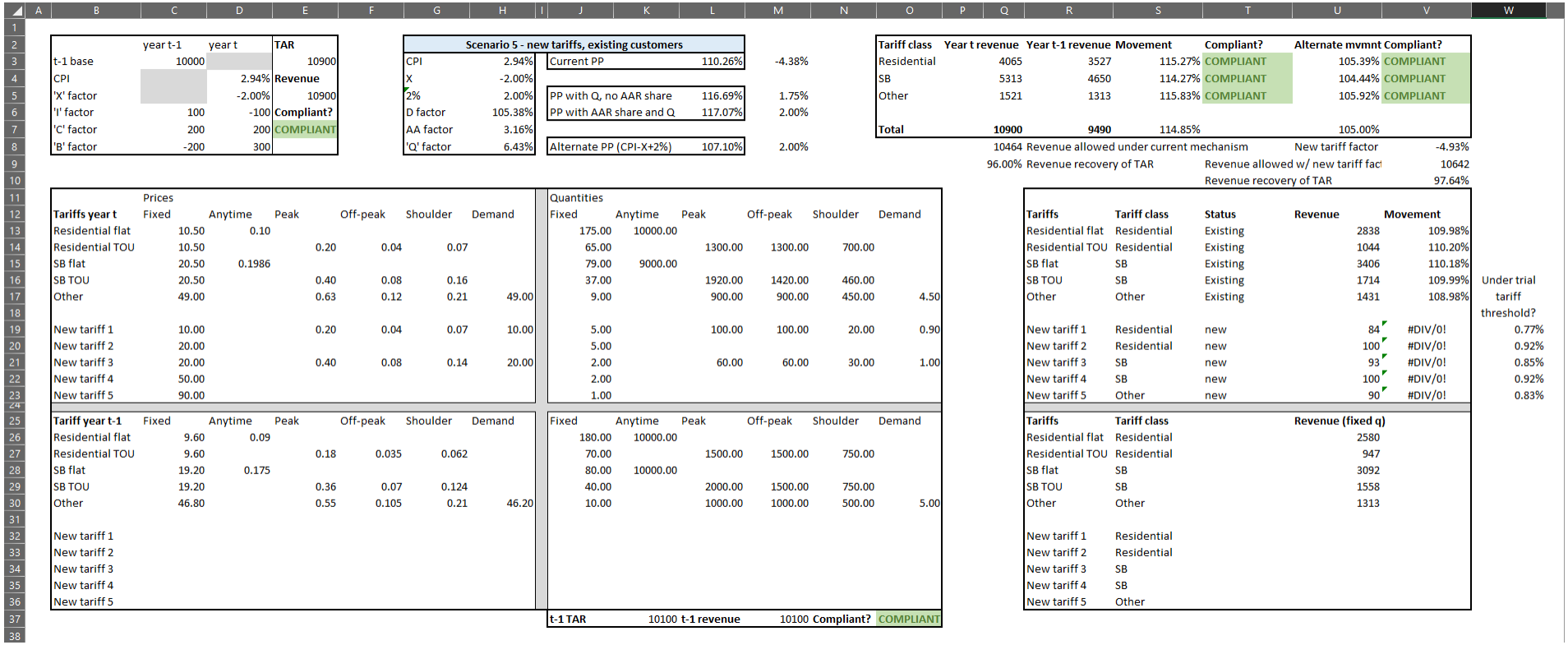
Table 2 Scenario examples

No.	Scenario	Notes
1	Quantities remain the same, with prices increasing.	Q factor in this scenario is 0% as quantities remain fixed. D factor is minimal.
1a	As per scenario 1, with a different CPI and X factor.	As above.
2	Quantities remain the same, with prices decreasing and a deliberate under-recovery of revenue.	Deliberate under-recoveries effectively give an allowance of more than the +2% provided by the NER. However deliberate under-recoveries come at the cost of forgone revenue (distributors are unable to recover in future years) and are not common. Q factor and D factor as per Scenario 1.
2a	The continuation of scenario 2, with the deliberate under-recoveries now in year t-1.	Q factor accounts for previous year deliberate under-recovery and provides appropriate adjustment to bring permissible percentage to +2% allowance. Significant departure from current permissible percentage which would restrict revenue recovery by 4%.
3	Quantities increasing, with prices remaining the same.	Q factor and D factor are significant. Q factor reduces permissible percentage by 7% to +2% allowance. If D factor is not applied, permissible percentage is higher and allows more than +2% allowance provided by the NER as quantities increase.
3a	As per scenario 3, with no annual adjustments (only CPI-X adjustment).	Q factor and D factor are material. Flat prices and no annual adjustments demonstrate the 2% threshold outcome as revenue amounts should be equal (as flat quantities are used in calculating movements).
4	Decreasing quantities and true-up of under-recoveries in previous years.	Q factor and D factor are significant. Q factor increases permissible percentage by 10% to +2% allowance. If D factor is not applied, permissible percentage is lower and does not give full +2% allowance provided by the NER, reducing as quantities decrease. Significant departure from current permissible percentage which would restrict revenue recovery by 7%.
5	Introduction of new/trial tariffs, with customers moving from existing tariffs.	The Q factor and D factors adjust for changes in quantities reflecting customers moving off existing tariffs. New/trial tariffs are not considered in t-1 revenue calculations as there is no t-1 prices. With a new tariff factor adjustment (as per the technical paper at Attachment A) the permissible percentage would be reduced by 5% and would restrict revenue recovery by 2.5%. Also significant departure from current permissible percentage which would restrict revenue by 4%.
5a	As per scenario 5, with all new tariffs in single tariff class.	As per scenario 5, however prices across residential tariffs must be adjusted more significantly to account for the new tariffs (i.e., existing customers will experience price decreases to allow for new tariffs).
6	Introduction of new/trial tariffs, with new customers (existing tariffs with quantities remaining the same).	No Q factor adjustment as existing tariff quantities remain the same. D factor as per Scenario 1, not impacted by new tariffs. New/trial tariffs are not considered in t-1 revenue calculations as there is no t-1 prices. As per scenario 6, the new tariff factor adjustment would restrict revenue recovery.
6a	The continuation of scenario 6, with all new tariffs retired.	Retired tariffs are not considered for the calculation of revenues due to no quantities for t year. Q factor adjusts for the prices in year t-1 set to accommodate new tariffs within allowed revenue (when measured against CPI-X movement). Significant departure from current permissible percentage which would restrict revenue by 2.6%.

Table 3 Key to scenarios worksheets

Cell reference	Comments
C3:C8	AAR for year t-1 (with CPI-X already applied) and annual adjustments
D3:D8	CPI and X factor to calculate AAR for year t, and annual adjustments
C11:O23	Prices and quantities for year t
C25:O36	Prices and quantities for year t-1
C37:H37	Year t total TAR, calculated revenue, and demonstration of compliance
G3	Change in CPI for year t
G4	X factor for year t
G5	2% allowance prescribed in the NER
G6	D factor – adjustment to move CPI-X+2% to a common base
G7	AA factor – annual percentage change in the sum of all annual adjustments factors
G8	Q factor – adjustment to account for changes in quantities from the preceding year
J37:O37	Year t-1 TAR, calculated revenue, and demonstration of compliance
K3:L3	Current permissible percentage (using incremental revenue interpretation) and effective allowance measured against total side constraint revenue movement for all tariff classes
K5:L5	Permissible percentage with Q factor, but no D factor applied, and effective allowance
K6:L6	Permissible percentage with both Q factor and D factor, and effective allowance (2% unless deliberate under-recoveries)
K8:L8	Permissible percentage under alternate side constraint mechanism, using just CPI-X +2%, and effective allowance (2% unless deliberate under-recoveries)
O4:O8	Year t side constraint revenues (calculated as p(t) x q(t)) for each tariff class and total
Q4:Q8	Year t-1 side constraint revenues (calculated as p(t-1) x q(t)) for each tariff class and total
R4:R7	Percentage movements for each tariff class for measuring against the permissible percentage
R7	Total movement for all customers, which should generally reflect the permissible percentage without 2% allowance
S4:S7	Percentage movements for each tariff class for measuring against the permissible percentage, with discounts under the alternate side constraint mechanism
S7	Total movement for all customers, with discounts under the alternate side constraint mechanism, which should generally reflect the permissible percentage without 2% allowance
T4:V7	Compliance indicators under the current mechanism, the proposed mechanism, and the alternate mechanism
N9:V10	Restricted revenues under current mechanism or with new tariff factor, where applicable
R11:V36	Tariff class identification and revenue calculations
W19:W23	Measurements against trial tariff thresholds under relevant scenarios

Figure 3 Scenarios worksheet example



	year t-1	year t	TAR
t-1 base	10000		10900
CPI		2.94%	Revenue
'X' factor		-2.00%	10900
'I' factor	100	-100	Compliant?
'C' factor	200	200	COMPLIANT
'B' factor	-200	300	

Scenario 5 - new tariffs, existing customers		
CPI	2.94%	Current PP 110.26% -4.38%
X	-2.00%	
2%	2.00%	PP with Q, no AAR share 116.69% 1.75%
D factor	105.38%	PP with AAR share and Q 117.07% 2.00%
AA factor	3.16%	
'Q' factor	6.43%	Alternate PP (CPI-X+2%) 107.10% 2.00%

Tariff class	Year t revenue	Year t-1 revenue	Movement	Compliant?	Alternate mvmnt	Compliant?
Residential	4065	3527	115.27%	COMPLIANT	105.39%	COMPLIANT
SB	5313	4650	114.27%	COMPLIANT	104.44%	COMPLIANT
Other	1521	1313	115.83%	COMPLIANT	105.92%	COMPLIANT
Total	10900	9490	114.85%		105.00%	

10464 Revenue allowed under current mechanism New tariff factor -4.93%
96.00% Revenue recovery of TAR Revenue allowed w/ new tariff fact 10642
Revenue recovery of TAR 97.64%

	Prices						Quantities					
Tariffs year t	Fixed	Anytime	Peak	Off-peak	Shoulder	Demand	Fixed	Anytime	Peak	Off-peak	Shoulder	Demand
Residential flat	10.50	0.10					175.00	10000.00				
Residential TOU	10.50		0.20	0.04	0.07		65.00		1300.00	1300.00	700.00	
SB flat	20.50	0.1986					79.00	9000.00				
SB TOU	20.50		0.40	0.08	0.16		37.00		1920.00	1420.00	460.00	
Other	49.00		0.63	0.12	0.21	49.00	9.00		900.00	900.00	450.00	4.50
New tariff 1	10.00		0.20	0.04	0.07	10.00	5.00		100.00	100.00	20.00	0.90
New tariff 2	20.00						5.00					
New tariff 3	20.00		0.40	0.08	0.14	20.00	2.00		60.00	60.00	30.00	1.00
New tariff 4	50.00						2.00					
New tariff 5	90.00						1.00					

Tariff year t-1	Fixed	Anytime	Peak	Off-peak	Shoulder	Demand	Fixed	Anytime	Peak	Off-peak	Shoulder	Demand
Residential flat	9.60	0.09					180.00	10000.00				
Residential TOU	9.60		0.18	0.035	0.062		70.00		1500.00	1500.00	750.00	
SB flat	19.20	0.175					80.00	10000.00				
SB TOU	19.20		0.36	0.07	0.124		40.00		2000.00	1500.00	750.00	
Other	46.80		0.55	0.105	0.21	46.20	10.00		1000.00	1000.00	500.00	5.00
New tariff 1												
New tariff 2												
New tariff 3												
New tariff 4												
New tariff 5												

t-1 TAR 10100 t-1 revenue 10100 Compliant? COMPLIANT

Tariffs	Tariff class	Status	Revenue	Movement	Under trial tariff threshold?
Residential flat	Residential	Existing	2838	109.98%	
Residential TOU	Residential	Existing	1044	110.20%	
SB flat	SB	Existing	3406	110.18%	
SB TOU	SB	Existing	1714	109.99%	
Other	Other	Existing	1431	108.98%	
New tariff 1	Residential	new	84	#DIV/0!	0.77%
New tariff 2	Residential	new	100	#DIV/0!	0.92%
New tariff 3	SB	new	93	#DIV/0!	0.85%
New tariff 4	SB	new	100	#DIV/0!	0.92%
New tariff 5	Other	new	90	#DIV/0!	0.83%

Tariffs	Tariff class	Revenue (fixed q)
Residential flat	Residential	2580
Residential TOU	Residential	947
SB flat	SB	3092
SB TOU	SB	1558
Other	Other	1313
New tariff 1	Residential	
New tariff 2	Residential	
New tariff 3	SB	
New tariff 4	SB	
New tariff 5	Other	