Warwick Anderson
GM Network Pricing
Australian Energy Regulator
By email: aerpricing@aer.gov.au

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Dear AER,

Re: Issues Paper: Review of gas distribution network reference tariff variation mechanism and declining block tariffs

Thank you for the opportunity to provide comment on the issues raised in your recent Issues Paper.[1]

We understand the AER is specifically seeking advice on two issues relating to the setting of regulated gas distribution network charges:

- Whether the "tariff variation mechanism" (known in other contexts as the "form of control") should change from the current weighted-average price cap to a revenue cap.[2]
- Whether the current practice of using "declining block tariffs" should continue or be replaced with flat tariffs or inclining block tariffs.[3]

In addition, the AER has raised issues about the handling of stranding risk.[4] The AER is to be congratulated for raising these issues for consideration at this time of transition for the gas sector.

The medium-term outlook for gas distribution networks is highly uncertain. As the Issues Paper sets out, most states have announced substantial emissions reductions targets and some governments (notably the ACT) have explicitly set a timetable for phasing out natural gas consumption. With increasing pressure for decarbonisation and electrification there is a material possibility that demand for gas distribution network services will decline substantially over the next 10-20 years – but the precise timing of that decline remains uncertain.

In our view, an orderly and economically rational approach to the transition of the gas sector involves trading-off different objectives. We seek a framework which neither artificially prolongs the use of gas networks at the expense of decarbonisation objectives, nor shuts down gas networks prematurely where doing so raises the costs of the transition or undermines confidence in the regulatory framework. We would like to see a policy framework which neither brings about a collapse in gas demand (e.g., through a loss of confidence in the regulatory framework), nor which inappropriately favours or promotes the use of gas by ignoring the consequences of carbon emissions.

To make on-going use of gas, gas customers (both businesses and households) must invest in and maintain a range of gas-consuming appliances and equipment. Decisions must be made about the maintenance or upgrade of this equipment. If end-customers are to make these decisions in an economically rational way they need information on the medium- and long-term path of gas prices, and some confidence that network charges will not rise unexpectedly. If end-customers fear that the regulatory framework will not protect them against future increases in network charges they may rationally decide to switch to other energy sources, rather than invest in maintaining or upgrading existing equipment, thereby accelerating the decline of the gas sector. While some stakeholders have implied that any actions that can be taken to reduce demand for gas contributes to broader

[1] AER, "Review of gas distribution network reference tariff variation mechanism and declining block tariffs: Issues Paper for stakeholder feedback", May 2023.

[2] Section 5.

[3] Section 6.

[4] Section 7.

decarbonisation objectives and therefore should be carried out, we prefer to see an orderly and rational transition, which involves maintaining the confidence of end-customers and investors in the framework.

Our response to the specific issues raised by the AER can be summarised as follows:

- The change from a weighted-average price cap (WAPC) to a revenue cap changes the allocation of volume risk in the short-term (within the access arrangement period) but has no impact on the allocation of volume risk in the longer term. Under the current regulatory framework, in the longer-term, the risk of a decline in volume all lies on the customer.
  Under the current regulatory framework, under either a price cap or a revenue cap, customers remain exposed to the risk that, if demand declines substantially, gas distribution network prices will rise in the next access arrangement period. The current regulatory framework offers end-customers little or no assurance they will be protected from future price rises in the event of a substantial decline in demand. This undermines incentives for investment by end-customers in reliance on the gas networks, potentially triggering a "death spiral".
  The choice between a price cap and a revenue cap reallocates the risk of short-term changes in gas demand – but leaves more important longer-term risks unaddressed.
- The Issues Paper raises the concern that the "declining block" tariff structure encourages increased consumption of gas. We suggest that some clarification is required. Gas users should pay the full marginal social cost for the consumption of gas, including the harm caused by carbon emissions. The easiest way to internalise these external effects is through a carbon tax or cap-and-trade mechanism. However, in the absence of the carbon tax, the regulator can replicate some of the effects of that tax by recovering some of the fixed costs of the network through variable charges. We encourage the AER to consider using the allocation of fixed costs to variable charges to reproduce the effect of a carbon tax.
  However, as long as there remain material fixed costs to be recovered through fixed charges, and while smaller gas users have low-fixed-costs alternatives (such as bottled gas), it makes economic sense to offer tariff options with lower fixed charges and higher variable charges for smaller users, while retaining tariff options with lower variable charges (but still including the cost of environmental harm) for larger users. This could be achieved by having a menu of tariff options, or through a declining block tariff. In this light, we see no reason to abandon the use of the declining block tariff (provided even large users pay the full social cost of gas consumption) and no particular public policy reason for moving to inclining block tariffs for gas distribution networks.

The Issues Paper also discusses the issue of stranding risk – that is the concern that gas networks may be reluctant to make socially-desirable on-going investments or maintenance today out of fear that they will not be able to recover the value of those investments in some scenarios in the future. To address the threat of stranding risk the AER has approved the use of "accelerated depreciation" in the past. However, accelerated depreciation is, at best, a partial and imperfect solution. Accelerated depreciation does not eliminate stranding risk in many cases and, moreover, it results in higher prices for gas consumers today. The threat that accelerated depreciation will be used in the future – resulting in higher prices to consumers at that time - is a deterrent to investment in assets which utilise the gas network today, thereby accelerating the decline of the sector.

In our view, more fundamental reforms to the regulatory framework are necessary to handle stranding risk and to ensure an orderly and rational transition. These reforms are necessary to ensure that – in the face of material uncertainty about future demand – customers are protected from major price changes. At the same time, those reforms should ensure that, network businesses can expect to recover the cost of on-going desirable investments in assets or maintenance. Without these changes we consider there is a risk of a disorderly decline in the gas sector, unexpected increases in network charges, a loss of confidence in the regulatory framework, together with the risk of stranded assets and a corresponding loss in value by both customers and gas networks.

At present there is a tendency to treat each five-year access arrangement period "myopically", with little consideration for the future. In our proposed framework, gas distribution networks would forecast future demand scenarios for up to 30 years and the associated probability of occurrence. The network business would then propose a path of prices which are broadly stable across the different scenarios and consistent with recovery of historic and future costs.

These forecasts would be updated at each subsequent access arrangement. If demand turns out to be higher than that forecast at the previous access arrangement and the network keeps its prices broadly stable the revenue of the network will increase. It makes sense to revalue the regulatory asset base upwards to reflect the expectation of higher returns in the future. Conversely if demand turns out to be lower than the forecast the revenue of the network will decrease if prices are kept broadly stable. In this case it makes sense for the regulatory asset base to be revalued downwards to reflect the new demand level.

These reforms will make the regulatory process a little more complex, but this is a necessary change. Current regulatory frameworks are not capable of handling substantial uncertainty. Under the current regulatory framework there is a risk that, in the face of substantial uncertainty, either or both (a) customers will face the risk of substantially higher prices as volumes decline, with a chilling effect on customer-side investments in reliance on the gas distribution networks; and/or (b) network businesses will not expect to recover the cost of socially-desirable investments, with a chilling effect on network-side investments. Either outcome is undesirable as it will hasten the demise of the gas sector in a way which is inconsistent with the lowest cost means to decarbonise our economy.

The AER has recognised the problems raised by substantial uncertainty in the gas sector in the past.[5] We urge the AER to take this opportunity to put in place the regulatory processes needed to ensure an orderly and considered transition away from the use of gas in the Australian economy.

The following sections of this submission look at these issues in more detail.

A move from a Weighted-Average Price Cap to a Revenue Cap?

The first issue raised by the AER relates to whether gas distribution networks should switch from a Weighted-Average Price Cap (WAPC) to a Revenue Cap. We agree with the analysis in the Issues Paper, that the key difference between these two "tariff variation mechanisms" is in the handling of volume risk in the short-term.

The underlying problem is that a sizeable proportion of network costs are sunk and independent of the level of gas consumption. Consequently, a change in gas consumption changes the per-unit costs. This is noted in the Issues Paper as follows:

> "Faced with a declining customer base, distributors can limit new expenditures and manage prices to minimise disconnections by customers. However, the costs to maintain a gas network do not decrease in proportion to gas demand decline. The pipeline assets are likely to remain in use and distributors will incur ongoing maintenance and replacement costs to maintain safe and reliable network services for the remaining customers on the network, subject to any partial shutdowns of the network."

Under a WAPC end-customers are largely insulated from deviation between forecast and out-turn volumes during the access arrangement period. Under a price cap, prices evolve year-to-year in a broadly stable manner, following a CPI-X path. In contrast, under a revenue cap, increases in out-turn volumes lead to a reduction in prices in the following year and vice versa. A substantial decline in volumes carried by distribution businesses would, in principle, lead to a substantial increase in network charges during the access arrangement period.

This conclusion is noted in the Issues Paper:

> "Another aspect of revenue cap regulation compared to price caps is that tariffs may be more volatile from year to year under revenue caps. This is because tariffs change in response to changing volumes to meet the distributor's allowed revenues. In principle, tariffs are less volatile under price caps because volume changes do not drive tariff changes. Rather, distributor revenues change with volumes."[6]

However, this difference between a WAPC and a revenue cap lasts for a maximum of five years. At the time of the next access arrangement review, under either a WAPC or a revenue cap, forecast prices are chosen so that forecast revenue is equal to forecast costs (as allocated through the Building Block Model). It follows that under

[5] AER, "Regulating gas pipelines under uncertainty: Information Paper", November 2021

[6] Section 5.2.

either a WAPC or a revenue cap, a decline in forecast volume will result in a increase in forecast prices at the start of the next access arrangement.

Another way of saying this is as follows: whether the regulatory framework adopts a WAPC or a revenue cap in the short-term (less than five years) in the longer term (more than five years) the regulatory framework implicitly operates as a *revenue cap*.

Where demand is broadly stable, there is little practical difference between a price cap and a revenue cap in the short-term (less than five years). In this case the concerns over (a) the difficulty of forecasting demand (and resulting tendency towards revenue over-recovery noted in the Issues Paper) and (b) the increased incentive for network businesses to promote consumption under a price cap, that are raised in the Issues Paper, are relevant and could argue in favour of a revenue cap. We observe that revenue caps are common in the regulation of electricity distribution networks.

However, when demand is highly uncertain a revenue cap (even in the short-term) has undesirable properties. A move to a revenue cap would expose gas customers to the risk of volume changes within the regulatory period. A large decline in gas network volumes would automatically result in a large increase in prices within the regulatory period. If there is a material probability of a decline in demand, the mere threat of such a change may act as a deterrent to customers who are considering investing in reliance on the gas network in the short and medium term.

The Issues Paper recognises this:

> "Material price increases caused by a shrinking customer base, or expectations of future price increases, can further incentivise customers to leave the gas network, compounding the effects of declining gas demand. This is sometimes referred to as the 'utility death spiral'."

In the face of substantial uncertainty about the future path of demand a move to revenue caps could undermine confidence in the regulatory framework.

However, the choice between a price cap and a revenue cap is likely to have a much smaller impact than the longer-term effects discussed above. In the longer term, as we have seen, the currently regulatory framework operates in the same manner as a revenue cap. Under either a price cap or a revenue cap *within* access arrangement periods, existing gas customers face the risk of substantial price rises *between* access arrangement periods if there is a substantial decline in demand. This can have a chilling effect on the incentive for investment in reliance on the gas networks. This is a larger issue which also should be addressed, as we set out further below.

A move away from a Declining Block tariff structure?

The second issue raised by the AER concerns the use of the declining block tariff structure. Stakeholders have expressed a concern that this tariff structure will encourage over-consumption of gas at a time when use of fossil fuels should be discouraged. Specifically, the AER quotes Darebin Climate Action Now as saying that:

> "Measures to maintain and stimulate demand should be rejected, specifically … block tariffs whereby the price of gas falls the more is used".

And:

> "FoE Melbourne calls for a move away from declining block tariffs because they offer an incentive to use more gas than is necessary".

The AER seems to agree with this perspective as it notes that under a flat tariff or an inclining block tariff "customers would not have an incentive to consume a larger volume of gas".

Gas consumers should face a price (at the margin) which reflects the full social cost of gas consumption, including the economic harm associated with carbon emissions. But the use of a declining block tariff is consistent with this objective and may be necessary to ensure that small users are not inefficiently encouraged to disconnect from the network, as we explain below.

To achieve economic efficiency, end-customers should pay (at the margin) a variable charge for gas which reflects the full social cost of gas and no more or less. This means gas customers should pay a price which reflects the marginal value of the underlying gas[7], the marginal cost of transportation, and the economic harm from the resulting carbon emissions. Let's assume that the cost of transportation over the distribution network is largely fixed. In this case, the marginal cost of transportation is essentially zero. The key question is how to ensure that end-customers pay a price that includes the full cost of the resulting environmental harm.

The easiest way to reflect the cost of these environmental harms into the price for gas is to impose a carbon tax (or a cap-and-trade scheme). With such policies in place the external cost of the economic harm is internalised into the wholesale price of gas. In this case it would be efficient to set the regulated tariffs equal to the marginal cost of transportation plus the marginal cost of the underlying gas which would now include the environmental harm.

Under a well-designed declining block tariff, the price (at the margin) for the largest users just reflects the underlying marginal cost. In the presence of an effective carbon tax the declining block tariff structure would achieve an efficient price at least for the largest users.

But Australia does not have a carbon tax. It is therefore possible to argue that the wholesale cost of gas is "too low" and does not include the environmental externality. In this context there is a case for the regulatory framework to *replicate the impact of the carbon tax*.

Specifically, there is a case for the regulator to recover some of the fixed costs of the provision of the network through variable charges. By shifting some of the fixed costs of the network to variable charges the AER effectively imposes a form of tax on gas consumption. If that "tax" is set correctly, end-customers will face the efficient price for gas and will make efficient consumption and use decisions.

If those variable charges are set to internalise the environmental harm then end-customers will pay a price which reflects the full social cost. In this case, the declining block tariff again achieves its goal of achieving an efficient price (at least for the largest users). A concern would only arise if the price of the marginal block is set different to the marginal cost of the gas, inclusive of the marginal environmental costs.

The declining block tariff structure does not encourage over-consumption of gas as it can be made consistent with an efficient level of gas consumption. This is illustrated in the diagram below. In that diagram, point "B" illustrates the level of consumption chosen by a large gas user under a declining block tariff where the harm from carbon emissions is excluded. Point "A" illustrates the level of consumption chosen after the harm from carbon emissions is incorporated in the declining block structure, shifting the block structure upwards. Point A reflects the efficient level of gas consumption for such a large user.[8]

Now let's ask: Is there an argument in favour of a declining block tariff? Why not have a simple flat tariff with a fixed charge and a variable charge which reflects the environmental harm from gas consumption? This would be a flat line though point A on the diagram.

The answer depends on the level of the fixed charges that are necessary to recover the remaining fixed costs.[9] Setting high fixed charges may discourage some users from connecting to the gas network at all (or encourage them to disconnect). As long as those users are prepared to make some positive contribution to the fixed costs of the network it is preferable for those customers to remain connected to the network.

Recovering the fixed costs of the network exclusively through fixed charges might give rise to an incentive for small customers to defect from the network. Small customers may have an alternative way of obtaining gas which

[7] That is, the price of gas at the wellhead.

[8] In this case, to keep things simple, the declining block structure has simply been shifted upwards, but more generally there could be different shifts in the different blocks, as long as the largest users face the full efficient price.

[9] Recall that some of the fixed costs have been recovered through variable charges to replicate the effect of a carbon tax.

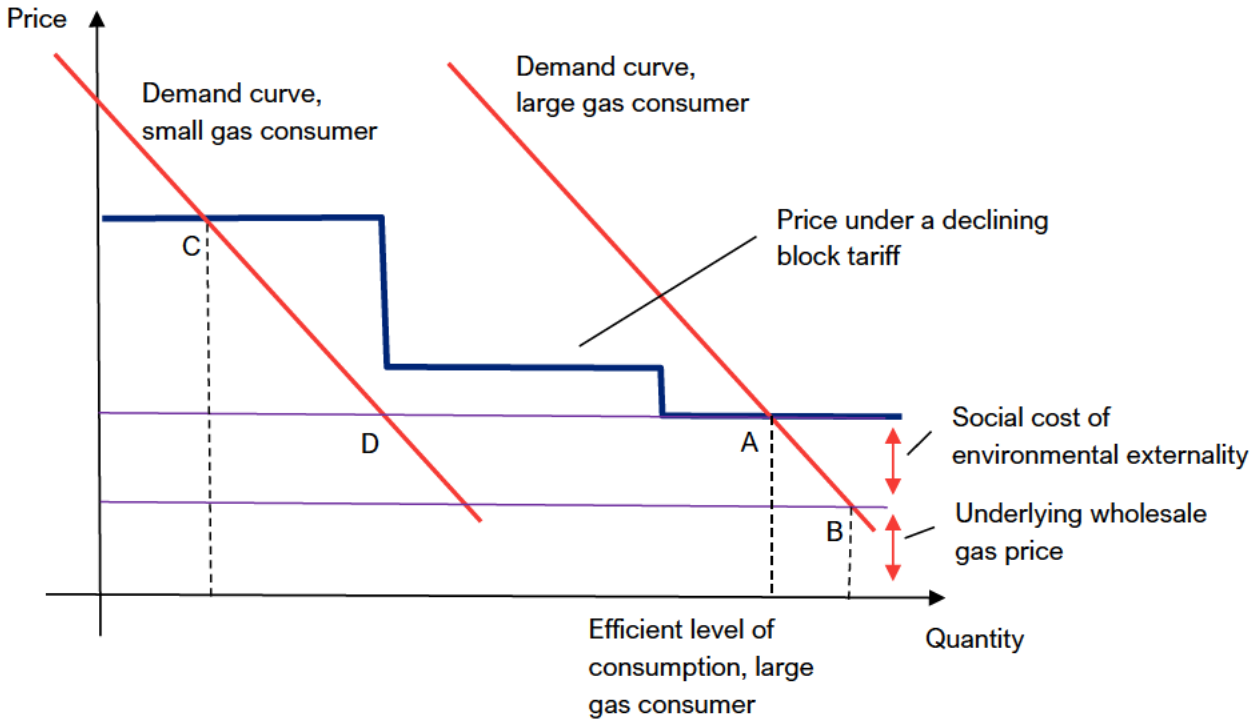
involves much lower fixed costs but higher variables costs. For example, they may choose to use bottled gas instead.

To induce as many customers to remain on the network as possible (so that the fixed charges can be spread as widely as possible), it usually makes sense to offer a discount on the fixed charges, combined with higher variable charges, for low-usage customers. This could be offered as a tariff option, as part of a menu of tariffs which includes a tariff option with a higher fixed charge and a lower variable charge. An alternative is to simply retain a single tariff, but with a declining block structure. The declining block structure allows fixed charges to be kept low so that low-usage customers do not defect from the network, while ensuring that the marginal price for high-usage customers is close to the marginal social cost.

In short, the declining block tariff is a sensible tariff structure when end-customers have an alternative source of supply with lower fixed costs and higher variable costs.

Does the declining block tariff inefficiently induce over-consumption of gas? The answer is no. Under a declining block tariff, the largest customers face the lowest price. Provided this price reflects the full social cost of gas, these customers make efficient gas consumption decisions. All other customers face a *higher* price so, if anything, they are induced to under-consume gas (point C on the diagram, relative to point D). But this reflects a trade-off in which these customers face a lower fixed charge, to discourage them from disconnecting from the network entirely.

Figure 1: A declining block tariff is consistent with efficient gas consumption (at least for large users) provided the harm from carbon emissions is internalised.



Should we switch to a flat, or inclining block structure? The marginal price of gas should reflect the full social cost of gas. In the absence of a carbon tax there is a case for recovering some fixed costs of the network through variable charges to replace the effects of a carbon tax. However, there will likely be some remaining fixed costs to be recovered. If recovering those remaining fixed costs through fixed charges would induce low-volume customers to switch to alternative sources of supply (such as bottled gas), it is preferable to keep the fixed charges low and to impose higher variable charges for at least some blocks of consumption. In other words, it is plausible that a declining block tariff will remain the most efficient tariff structure in the future.

Addressing the price-shock and stranding risks

The gas distribution sector is facing a situation of significant uncertainty – especially uncertainty about the economic life of the gas distribution networks. These networks may be required to be shut down in a relatively short period (e.g., as little as ten years), or they may continue to provide valuable services for longer (e.g., twenty years or more).

We explained above that under a revenue cap the possibility of a decline in demand for network services raises the spectre of a substantial increase in regulated prices in the future. This has a chilling effect on the incentive to invest in reliance on the gas network. But there are other reasons to be concerned about a revenue cap. In certain circumstances it may not be possible to make up for a loss in revenue due to a decline in demand by simply increasing regulated prices. If demand drops off significantly enough there may be too few remaining customers, with too little willingness to pay, to allow the network business to recover its costs. In this case the network faces a "stranding risk", even in the presence of a revenue cap.

We note that the Issues Paper suggests that a (short-term) revenue cap could reduce stranding risk. The Issues Paper observes:

> "[A move to a revenue cap] may in fact reduce stranding risk, particularly in the short term (a 5 year access arrangement period) if revenue caps were applied, given that distributors would have a 5 year revenue guarantee under that approach."

No regulatory framework can provide a revenue guarantee. As already noted, if demand drops enough, there may be too few remaining customers, with too little willingness to pay, to allow the network business to recover its costs.

Historically the AER has allowed some businesses to address stranding risk through accelerated depreciation. This is an imperfect and, at best, partial solution. The potential to adopt accelerated depreciation in the future means that customers face a risk of price increases, which may have a chilling effect on customer investment. In addition, where the regulated firm faces an on-going risk of stranding starting in the near future it may not be possible to depreciate the assets fast enough to completely eliminate the risk of stranding in time. Accelerated depreciation may not be a sufficient regulatory response to a risk of stranding.

Historically there has been a tendency to treat each regulatory period "myopically", ignoring possible developments in future periods. This practice, which is satisfactory when demand is broadly stable, is no longer fit for purpose in the context of gas networks. In the presence of uncertainty, it is necessary to forecast demand and supply conditions out over the medium and long-term (perhaps, say, up to 30 years in the future). In addition, customers should be informed about the likely future path of prices and those prices should be broadly stable, independent of the realisations of demand. This is because customers need assurance over the likely future path of prices so they can make efficient investments in reliance on the gas network.

We recommend that, in preparing an access arrangement submission, the gas distribution networks should forecast a range of future demand scenarios out into the future for a period of up to 30 years. For each scenario, the network should estimate and associated probability of occurrence. The network business should propose a path of prices which are broadly stable across the different scenarios and consistent with recovery (in expectation) of historic and future costs. The preparation of such a forecast provides a degree of comfort to customers that different scenarios have been considered and that the prices they face are likely to remain broadly stable regardless of the demand out-turns.

At the end of each access arrangement period the regulator and the regulated firm will have new information about the likely course of demand. The future course of demand might be higher than the average or expected level forecast at the start of the previous access arrangement. In this case, if the regulated business keeps its prices broadly stable – as we have advocated – the revenue of the regulated firm will increase. But this is consistent with an overall expectation of cost recovery (as was demonstrated at the start of the access arrangement period). In this case, it makes sense to revalue the regulatory asset base upwards to reflect this expectation of higher returns in the future (consistent with stable prices).

Conversely, at the end of the regulatory period the regulated business might foresee that demand is lower than the average or expected level forecast at the start of the previous access arrangement. In this case, if the regulated business keeps its prices broadly stable – as we have advocated – the revenue of the regulated firm will decrease. But this does not mean it is OK for the regulated business to raise its charges. As we have seen, the regulated business should keep its prices broadly stable. That this is consistent with an overall expectation of cost recovery was demonstrated in the scenarios at the start of the access arrangement period. In this case, it will make sense for the regulatory asset base to be revalued downwards to reflect the new demand level.

Rule 85 of the National Gas Rules anticipates that the regulatory asset base may be written down in some circumstances. As we have seen above, this is consistent with a well-functioning regulatory framework in which prices are held broadly stable despite declining demand. However, there is a need to balance the risk of a downwards revaluation with an offsetting risk of upwards valuation. We suggest that in a fit-for-purpose regulatory regime, changes to the Rules (including, possibly changes to Rule 85) will be required to allow for an upward revaluation in the event that demand is higher than expected, in order to ensure that the network business is able to recover the full cost of its investments in expectation, across all possible scenarios.

What are the merits of this approach? The historic regulatory frameworks in Australia have not been particularly good at handling risk. As things stand, in the face of a risk of declining demand end-customers face a substantial risk of higher prices either in the future when a demand decline eventuates, or when a demand decline is anticipated, through accelerated depreciation. This threat of higher prices undermines the rationale for regulation in the first place. On the other hand, attempts to keep prices stable and "affordable" in that transition risks imposing stranding risk with the consequential risk of under-investment by the network business.

To facilitate an orderly and well-managed transition (including the phasing out of the gas distribution network industry where that is required), the regulatory frameworks will have to improve. The approach set out here offers promise as a mechanism for efficiently managing demand uncertainty. We would be happy to develop this approach further, including some detailed worked examples, should the AER or market participants require.

Conclusion

We appreciate the opportunity to make a submission to this Issue Paper. The paper raises topical issues related to the pricing of gas distribution networks. However, we suggest that the problems with the current regulatory framework are deeper than the issues raised in the Issues Paper and will require more material regulatory reform.

The Issues Paper asks about the choice between a price cap and a revenue cap. In the face of substantial uncertainty, we favour retaining a price cap as it offers improved protection to customers against the risk of future price rises. Nonetheless, beyond the end of each regulatory period the current regulatory framework implicitly operates like a revenue cap. We suggest that this gives rise to more serious problems that must be addressed if the AER is to maintain confidence in the regulatory framework.

Stakeholders have suggested that the declining block tariff creates incentives to increase gas consumption. The AER can and should replicate the effect of a carbon tax through the allocation of a share of fixed costs to variable charges. However, if there is a need to recover remaining fixed costs, fixed charges should not be set so high as to deter small customers (who can switch to the use of bottled gas) from taking supply from the network. The declining block tariff scheme achieves this objective while ensuring that large users face an efficient price at the margin. At this stage we see no compelling reasons to move away from declining block tariffs.

We are happy to discuss this submission further with the AER. Please contact Darryl Biggar on [redacted] if you have any questions about this submission.