

Findings Report
Victorian Gas Distribution Businesses’
consultation on Incentive Mechanisms
2018 to 2022 Gas Access Arrangement
Review

23 September 2016

Farrier Swier
Consulting

Level 7, 330 Collins Street, Melbourne
Victoria 3000 Australia

Telephone 613 9612 1900

Facsimile 613 9612 1999

www.farrierswier.com.au



Disclaimer

This report has been prepared by Farrier Swier Consulting Pty Ltd (FSC) for the sole use of Multinet Gas, Australian Gas Networks and AusNet Services (the “Victorian gas DBs”). This report is supplied in good faith and reflects the knowledge, expertise and experience of the consultants involved. The report and findings are subject to various assumptions and limitations referred to within the report. Any reliance placed by a recipient of the report upon its calculations and projections is a matter for the recipient’s own commercial judgement. FSC accepts no responsibility whatsoever for any loss occasioned by any person acting or refraining from action as a result of reliance on the report.

Table of Contents

1.	Introduction	4
1.1	Purpose of this report	5
1.2	Background	5
1.3	Structure of this report	5
2.	The consultation process	7
2.1	The consultation process	7
2.2	Consultation questions	8
2.2.1	Issues Paper consultation questions	8
2.2.2	Joint Stakeholder Forum Consultation Questions	10
3.	Consultation Findings	11
3.1	Competition for Victorian Gas DB services	11
3.2	Should the Incentive framework be developed further?	12
3.3	Alignment with the electricity distribution incentive arrangements	12
3.4	Efficiency Benefit Sharing Scheme	13
3.5	Capital expenditure efficiency incentives	13
3.5.1	Theoretical framework for capital expenditure efficiency	13
3.5.2	The desirability of introducing a CESS	14
3.5.3	Should there be a single uniform CESS scheme?	15
3.5.4	Symmetrical vs asymmetrical CESS design	15
3.6	Customer Service Incentives	16
3.6.1	Objectives of customer service incentives	16
3.6.2	Design of customer service scheme to counterbalance incentives for cost reduction	17
3.6.3	Customer views on reliability / price trade-offs	17
3.6.4	Analysis required to support customer service incentive design	18
3.7	Network Innovation Incentives	18
3.7.1	The role of innovation	18
3.7.2	How best to incentivise innovation?	19
3.8	Increasing the power of incentives	19

I. Executive Summary

This Findings Report sets out the process and outcome of stakeholder consultation undertaken by the Victorian Gas Distribution Businesses (DBs) during mid-2016 on potential changes to incentive mechanisms that the DBs could propose to the Australian Energy Regulator (AER) for their forthcoming Access Arrangement (AA) period.

The stakeholder consultation process included preparation of an Issues Paper (see attachment); a Joint Stakeholder Forum held in Melbourne on 11 July 2016; and stakeholder submissions.

Key points arising from consultation are:

- The need for economic regulation of the Victorian gas DBs is premised on them having significant market power due to natural monopoly characteristics. While the AER questioned whether gas is a ‘fuel of choice’ (meaning that DBs may have sufficient market incentives for efficiency) others considered there was no realistic ability for some groups such as low income consumers and renters to switch fuel and appliances and therefore the regulatory regime needed to provide incentives for efficiency. The ENA noted that gas distributors are still regulated monopolies under the existing regime to which the CPI-X form of regulation is applied.
- There was a general consensus that the incentive framework should be strengthened through the introduction of a Capital Efficiency Sharing Scheme (CESS). The AER published its Statement of Intent 2016-17 during the consultation process which set out its intention to introduce a CESS for gas DBs.
- There was support for appropriate customer service incentives to counter-balance stronger cost reduction incentives created by introducing a CESS. There were differing views on how this should be achieved. Options included basing a scheme on the scheme applied to electricity distributor businesses and/or through reviewing and strengthening the existing Guaranteed Service Level (GSL) scheme.
- There was support for the idea that network innovation promotes the long-term interests of consumers. Some stakeholders considered that specific measures, such as a Network Innovation Scheme (NIS) were required, while others thought that incentives created through a CESS and the Efficiency Benefit Sharing Scheme (EBSS) might be adequate.

2. Introduction

2.1 Purpose of this report

This Findings Report sets out the process and outcome of stakeholder consultation undertaken by the Victorian Gas Distribution Businesses (**DBs**) during mid-2016 on potential changes to incentive mechanisms that the DBs could propose to the Australian Energy Regulator (**AER**) for their forthcoming Access Arrangement (**AA**) period.

2.2 Background

Rule 98 of the National Gas Rules (**NGR**) provides that an **AA** may include (or the **AER** may require it to include) one or more incentive mechanism to further encourage efficiency in the provision of services by the service provider.

Multinet Gas, Australian Gas Networks (**AGN**) and AusNet Services (**the Victorian gas DBs**) are the three gas DBs providing gas distribution services to gas consumers in Victoria. The DBs are currently preparing their revised **AA** and Access Arrangement Information (**AAI**) for their respective Victorian gas distribution networks for the forthcoming access arrangement period (2018 to 2022). The DBs must submit their **AA** proposals and **AAI** to the **AER** by 31 December 2016.

The DBs are exploring potential changes to the incentive mechanisms that could be introduced in their forthcoming **AA** period with a particular focus on the potential benefits and detriments that might accrue to consumers.

The **AER** strongly encourages DBs to consult with stakeholders about any proposed changes to regulatory arrangements. This process, including this Findings Report, reflects the DBs' commitment to undertaking high quality consultation with their stakeholders.

2.3 Structure of this report

Section 2 sets out the consultation process, and the questions considered in the consultation process. Section 3 sets out the outcome of the consultation. Section 4 sets out feedback on the consultation process to date and suggestions for the future.

This Report does not provide detailed information on incentive mechanism concepts and issues. Readers wishing to understand further background on incentive mechanism issues are referred to the Issues Paper (see **Attachment A**).

2.4 Our role

The Victorian gas DBs engaged us to facilitate stakeholder engagement on the appropriate incentive arrangements to apply to gas distributors. Our role has included



the preparation of the Issues Paper, facilitation of a Stakeholder Forum and capturing and reporting on the feedback through the stakeholder engagement program in this Findings Report.

3. The consultation process

3.1 The consultation process

Consultation comprised the following steps

- **Issue Paper** - On 10 June 2016 the DBs released an Issues Paper¹ prepared by Farrier Swier Consulting (FSC)
- **Joint Stakeholder Forum** - The DBs held a joint Stakeholder Forum on Incentive Mechanisms in Melbourne on 11 July 2016 facilitated by FSC
- **Submissions** - Stakeholders were invited to make submissions.

Importantly, during the consultation process (on 30 June) the AER published its Statement of Intent 2016-17 which set out its intention to introduce a Capital Expenditure Sharing Scheme (CESS) for gas DBs².

Further details on the consultation process are set out in Box 1.

Box 1 - Victorian Gas DBs – Consultation on Incentive Mechanisms Consultation

1. Issue Paper

The Issues Paper explored potential changes to the incentive mechanisms that could be introduced in the forthcoming access arrangement period with a particular focus on the potential benefits and detriments that might accrue to customers.

The proposals were:

- Retaining the Efficiency Benefit Sharing Scheme (**EBSS**) framework and considering changes to its operation (in particular whether or not stronger incentives should be introduced)
- Including up to three new incentive mechanisms:
 - A Capital Expenditure Sharing Scheme (**CESS**)
 - A Customer Service Incentive Scheme (**CSIS**)
 - A Network Innovation Scheme (**NIS**).

The Issues Paper also sought to provide a basis for engagement with stakeholders by setting out a number of consultation questions. These are set out in Box 2 below.

¹ Issues Paper, Incentive Mechanisms for the Victorian Gas Distribution Businesses 2018 to 2022 Gas Access Arrangement Review, Farrier Swier Consulting, 10 June 2016

² Pg. 8 AER Statement of Intent 2016-17, 30 June 2016.

2. Joint Stakeholder Forum

The Joint Stakeholder Forum was attended by 27 stakeholders including representatives of the DBs. Proceedings included presentations from FSC and the AER followed by facilitated discussion between the stakeholders. The consultation questions considered at the forum are set out in Box 3 below.

3. Submissions

Submissions on the Issues Paper were received from:

- Energy Network Association (ENA);
- Consumer Utilities Advocacy Centre (CUAC)
- Jemena (owner of the Jemena Gas Networks (JGN) in New South Wales)
- Red Energy/Lumo.

3.2 Consultation questions

3.2.1 Issues Paper consultation questions

Box 2 summarises the consultation questions set out in the Issues Paper. These questions are relevant to any changes to incentive mechanisms the DBs could propose to the AER and how the AER might consider them. Stakeholders were not expected to address every question. Submissions only addressed some of these questions.

Box 2 Issues Paper Consultation questions

Q1. How should the AER assess incentive arrangement proposals included in gas distribution AA and AAI proposals?

- Is the suggested approach in Box 1 of the Issue Paper for how the AER should consider incentive mechanism arrangements reasonable?
- Are there any other matters that the AER should consider?

Q2. Do stakeholders agree with the theoretically desirable attributes of an incentive framework set out in Box 3 of the Issues Paper)?

- Should there be flexibility to set powers of incentive that are different between gas DBs?
- Are there other theoretically desirable attributes of an incentive framework?

Q3. Would introducing a Capital Expenditure Efficiency Sharing Scheme (CESS) be desirable?

-
- In particular:
 - Is a CESS required to incentivise the DB to continuously spend capital efficiently over the period?
 - Is a CESS required to avoid distorting the DBs' capital and operating expenditure decisions?
 - Is aligning the incentive power (sharing factor) of the existing EBSS with the CESS beneficial / necessary? How important is this?
 - Are there any other issues of principle that should be considered?
 - Should the CESS be introduced in the forthcoming or the subsequent access arrangement period?
 - What specific design features should be considered?
 - Should all categories of capital expenditure be included in the CESS, or are there some categories that should initially be excluded, and if so, why?
 - Should there be an adjustment mechanism for material deferred capital expenditure?

Q4. Would introducing a Customer Service Incentive Scheme be desirable in principle?

It is likely that the outcome of detailed customer research will be a key input into decisions on whether a CSIS would be beneficial in promoting the NGO. Noting this, stakeholder feedback is sought on the following issues of principle in considering whether or not a CSIS might be beneficial.

- Does the current regulatory framework create incentives for cost reduction to the detriment of service quality?
- Are there benefits in encouraging DBs to optimise service quality as occurs in electricity distribution through the STPIS?
- If there was a decision to introduce a CESS does the existing (or an amended) GSL provide incentives to balance service quality with cost reductions, or is a CSIS required?
- Do you agree with the types of measures to be included in a CSIS? What other measures should be included in the CSIS?

Q5. Should the AER approve higher-powered incentives?

- Has the rate of productivity growth for the Victorian gas DBs converged on the long run rate of technological change? Is the evidence for this convincing?
- Do the Victorian gas DBs need greater incentives to achieve further efficiencies and higher productivity growth (consistent with the NGO)?
- Are there material risks arising from increasing the power of incentives? Are these risks manageable?

Q6. Is a new regulatory incentive required for the Victorian gas DBs to pursue innovation, or are the current arrangements sufficient?

-
- Is there a problem - under the status quo, is it likely that the DBs may be slow to deliver innovation that would promote the NGO?
 - Would introducing a CESS sufficiently promote innovation or is a Network Innovation Scheme (NIS) required in addition?
 - Is promoting innovation best addressed through a regulatory incentive introduced under Rule 98, through other government policies or agencies and/or through rules development by the AEMC?

Q7. Is the summary of incentive mechanism options and linkages in Table 1 of the Issues Paper appropriate? Are there any changes suggested?

3.2.2 Joint Stakeholder Forum Consultation Questions

Box 3 sets out a simplified set of consultation questions considered at the Joint Stakeholder Forum.

Box 3 – Joint Stakeholder Forum Consultation Questions

- Would introducing a CESS be desirable and what preconditions are there for introducing one?
 - Limiting inefficient deferral of capital expenditure?
 - A workable service quality incentive that balances incentives for cost reduction?
 - Would introducing a Customer Service Incentive Scheme be desirable to encourage optimising of service quality? (in addition to balancing incentives for cost reduction)
 - How do customers feel about service quality provided by the Victorian gas DBs?
 - How could a Customer Service Incentive Scheme aimed at balancing incentives for cost reduction be designed?
 - Is a new regulatory incentive required for the Victorian gas DBs to pursue innovation?
 - Are the DBs operating at close to optimal efficiency, and is the DBs rate of product improvement converging on the rate of industry wide technological change?
 - Would consumers benefit from stronger incentives?
 - Are the risks of stronger incentives manageable?
-

4. Consultation Findings

This section sets the outcome of the consultation including stakeholder submissions, and forum discussion. It also notes relevant components of the recent AER *Statement of Intent 2016-17*. The consultation outcomes are set out under the following headings:

- Competition for Victorian Gas DB services
- Should the Incentive framework be developed further?
- Alignment with electricity distribution incentive arrangements
- Efficiency Benefit Sharing Scheme
- Capital expenditure efficiency incentives
- Customer service incentives
- Network Innovation Incentives
- Increasing the power of incentives

4.1 Competition for Victorian Gas DB services

The need for economic regulation of the Victorian gas DBs is premised on them having significant market power due to natural monopoly characteristics.

During the forum, the AER questioned whether gas is a ‘fuel of choice’ and hence whether gas distribution services are subject to a meaningful level of competition from electricity. It was suggested that such competition may mean that DBs have sufficient market incentives for efficiency making the need for improved incentives in the regulatory framework less important or unnecessary.

CUAC noted research by ACIL Allen that “there is scant information on cross-price elasticities relevant to eastern Australian gas and electricity markets”³. CUAC considered that low income consumers and renters have virtually no ability to switch their gas appliances, hot water and heating systems for electric substitutes in the short term.

This group’s ability to switch fuel and appliances is likely to remain unchanged in the longer term in the absence of a significant changes in government policy or incentives.

Higher income customers may have a somewhat higher elasticity of demand should gas prices increase, though they are more likely to consider switching only at the

³ ACIL Allen Consulting, ‘Report to the Australian Energy Regulator - Review of Demand Forecasts for the AGN South Australia Gas Networks for the Access Arrangement Period Commencing 1 July 2016 – Public Version’, 11 November 2015, 34.

point it becomes financially viable – for example when a hot water heating system breaks down or needs replacing, during a significant renovation or when planning a new build. This means that the majority of Victorians will be directly impacted by price changes but have limited capacity to respond, other than through reduced usage.

The ENA noted that “gas distributors are still regulated monopolies under the existing regime to which the CPI-X form of regulation is applied”.

4.2 Should the Incentive framework be developed further?

There was broad support for the further development of the incentive framework, with the exception of the Red Energy/Lumo submission.

As noted, the AER Statement of Intent 2016-17, set out its intention to introduce a CESS for gas DBs. The AER in the Joint Stakeholder Forum also indicated its view that appropriate customer service incentives would also be needed to counterbalance stronger incentives for cost reduction arising from any introduction of a CESS.

The ENA and Jemena supported further development of the incentives regime applying to gas DBs where these can promote the long-term interest of consumers. The ENA stated that the current incentive arrangements that apply to DBs results in an unbalanced incentive framework.

CUAC stated that it was open to the idea of new incentives for the gas DBs but would like to see a greater reliance on empirical evidence as the basis for the proposed incentive mechanisms, rather than “a dependence on theoretical economic arguments which often cannot predict unintended consequences.”

Red Energy / Lumo were not supportive of further development of the incentive framework. They considered that if the AER decided to introduce a CESS in gas distribution that it needed to be convinced that this would deliver improvements in dynamic efficiency.

4.3 Alignment with the electricity distribution incentive arrangements

There were differing views on whether or not any gas incentive arrangements should adopt a common approach to the existing electricity distribution incentive arrangements.

The ENA stated that it would seem appropriate to adopt common incentive framework arrangements for gas and electricity:

The proposed incentive arrangements are informed by the incentive arrangements that currently apply to electricity distribution businesses in the National Electricity Market. The AER undertook significant industry consultation through its Better

Regulation Reform program in 2012/13 and it would seem appropriate to adopt common approaches for gas and electricity. Taking an industry-wide approach reduces the administrative costs of regulation and provides for consistent cost-efficiency signals across infrastructure types.

Jemena however considered that incentive schemes are likely to vary between DBs. Jemena considered that the “assessment of different schemes should be informed by the value that customers place on the service attributes being incentivised and these are likely to vary as between distribution businesses.”

As discussed in section 4.5.4 below, CUAC proposed an asymmetrical CESS design. This approach differs from the symmetrical CESS scheme currently applying to electricity distribution businesses.

As discussed in section 4.6 below there was a range of views on the extent any gas distribution customer service incentive mechanism should align with the current electricity distribution customer service incentive arrangements.

4.4 Efficiency Benefit Sharing Scheme

Though submissions were not explicit, there appears to be no disagreement amongst stakeholders that the EBSS should continue to apply to the Victoria gas DBs in its current form.

Jemena stated that it had discussed the EBSS that now applies for the 2015-20 AA period with the JGN customer council which confirmed its support for its continuation. CUAC’s submission did not explicitly discuss the EBSS, but it appears that they support it continuing.

4.5 Capital expenditure efficiency incentives

The submissions and workshop discussion raised the following matters concerning capital expenditure efficiency incentives:

- the theoretical framework for capital expenditure efficiency
- the practical desirability of introducing a CESS including:
 - evidence that introducing a CESS will promote dynamic efficiency that leaves customer better-off
 - mitigating incentives for inefficient capital deferral
- should there be a single uniform CESS scheme?
- symmetrical vs asymmetrical CESS design.

4.5.1 Theoretical framework for capital expenditure efficiency

The Issue Paper set out the theoretical case that the absence of a CESS was likely to cause inefficiency because of:

- uneven incentives for DBs to achieve capital efficiency through time
- unbalanced incentives for DBs to choose an efficient mix of capex and opex.

Though submissions were not explicit there appeared to be general stakeholder support in favour of this theoretical case. The ENA and Jemena were supportive of introducing a CESS. CUAC stated that there was “merit in a mechanism to incentivise gas DBs to invest efficiently across all years of the revenue period.”

4.5.2 The desirability of introducing a CESS

There was qualified support for introducing a CESS in practice.

The ENA considered that the development and implementation of a CESS in gas would be desirable. Jemena was open to the prospect of a CESS.

There were two areas of concern about the introduction of a CESS:

- A concern as to whether, in practice introducing a CESS would promote more dynamic efficiency that leaves customers better off
- Concerns about unintended consequences, in particular incentives for inefficient capital deferral.

These are discussed below.

Evidence that introducing a CESS will promote dynamic efficiency that leaves customer better off

CUAC wanted to see clearer evidence that a CESS would in practice leave customers better off.

As noted above, Red /Lumo Energy did not support introducing a CESS. They considered that the DBs already appeared to be operating close to the efficient frontier. They considered that if the AER decides to introduce a CESS for the DBs, it needed to be convinced that it will deliver improvements in dynamic efficiency.

Mitigating incentives for inefficient capital deferral

CUAC was concerned that a high-powered incentive for gas DBs to underspend their capex allowances potentially created a perverse incentive for the deferral of capex to future revenue periods. The AER at the joint stakeholder forum also noted this issue.

The ENA considered there are practical solutions to the issue of inefficient capital deferral, including the deferred capital adjustment mechanism for electricity businesses which is designed to deter network businesses from inefficient capital deferral between regulatory periods.

CUAC encouraged the AER to review the empirical evidence of DBs’ spending during the 2003-07 and 2008-12 gas AA periods when the ESC’s CESS scheme was in operation. CUAC considered it may also be useful to review the efficacy of the CESS

mechanism for the electricity distribution regulatory period 2014-19 in NSW/ACT to determine whether the incentive was effective and whether the power of expenditure sharing ratios is appropriate.

4.5.3 Should there be a single uniform CESS scheme?

The current electricity CESS scheme is included in the Expenditure Incentives Guidelines and the AER's practice is to apply the same scheme to all electricity distribution businesses.

The ENA advocated applying the electricity CESS to gas distribution on the basis that there was no reason that any differences should apply between the industries. Jemena considers it would be sensible for there to be a single uniform CESS⁴. CUAC considered that it would be inappropriate for DBs to receive different sharing ratios. It considered that doing so would add further complexity and increase the burden on the AER.

4.5.4 Symmetrical vs asymmetrical CESS design

The current electricity CESS is a symmetrical scheme with the sharing ratios being the same for under and overspends.

CUAC considered that if the AER introduces a CESS, it should be asymmetrical whereby the DBs could retain up to 30 percent of any underspend of their capex allowance but overspends should be subject to a 50 percent sharing ratio. CUAC's rationale for a higher powered disincentive for overspends was as follows:

- *a concern that a high-powered incentive applying to capex is particularly problematic given the information asymmetry between the AER and the DB, and the significant time-lag between deferred capex and potentially adverse consequences in service quality*
- *capex forecasts are likely to be biased upwards due to information asymmetry between the AER and the DB*
- *consumers are not best placed to manage the forecast risks, while DBs have access to a variety of regulatory mechanisms to address significant forecast risks mechanisms such as pass through arrangements protect distributors from unforeseen efficient overspends; and*
- *an efficient overspend increases a DB's Regulated Asset Base (RAB), resulting in a reduced penalty through the long-term benefit to a distributor through the*

⁴ Jemena's submission stated that incentive schemes are "likely to vary between distributions businesses" nationally. Jemena subsequently clarified that in their view service performance schemes are likely to vary as between distribution businesses but that it would be sensible for to be a single uniform CESS.

return of capital. It is noted the AER introduced an ex-post review mechanism in electricity to manage this risk, however this already exists in gas.

4.6 Customer Service Incentives

Stakeholder submissions highlighted differences of view on the following matters:

- defining the objectives of customer service incentives
- design of a customer service scheme to counterbalance incentives for cost reduction.

There was also feedback on:

- reliability / price trade-offs
- analysis to support customer service incentive design.

4.6.1 Objectives of customer service incentives

The submissions indicated differences in views about the objectives of the customer service scheme. The objective of a customer service incentive scheme could be:

1. at a minimum, to provide a counter-balance to incentives for inefficient cost reduction,
or in addition
2. to promote improved service outcomes for customers by better aligning the incentives for the DB with outcomes that are desirable for customers.

Counter-balance incentives for inefficient cost reduction

As noted, the AER considered that if a CESS was introduced then at a minimum this needed to be accompanied by a sufficient customer service incentive to counter-balance incentives for inefficient cost reduction. It appeared there was general agreement from stakeholders with this view.

Promoting improved service outcomes

The ENA considered that customer service incentives could also promote the objective of achieving better service outcomes for customers:

The ENA considers that the CSIS can provide benefits to consumers by encouraging a strong focus on improving performance and better aligning the incentives for the business with outcomes that are desirable for customers.

The ENA's view supported discussion in the Issues Paper which assumed that any customer service incentive scheme would draw on some of the features of the current electricity distribution Service Target Performance Incentive Scheme (STPIS).

CUAC however emphasised that the role of a customer service incentive, in their view, was to “ensure a capex underspend does not result in compromised service standards”.

4.6.2 Design of customer service scheme to counterbalance incentives for cost reduction

Related to discussion on the objectives there were also differing views on the correct approach to designing a customer service incentive scheme to counterbalance incentives for cost reduction.

The ENA considered that there was limited discretion for investment projects to be deferred by the DBs due to the Victorian Gas Distribution System Code:

It may be argued that incentive measures relating to reliability are required in order to balance strengthened expenditure incentives (i.e. the CESS) and reduce the scope for inefficient deferrals. However, the incentive problem only applies where businesses have substantial discretion over the timing of investment. Given that the businesses are subject to the GSL obligations under the Victorian Gas Distribution System Code and the licensing and reporting frameworks, the discretion for investment projects to be deferred is limited.

CUAC considered that customer service incentives should be closely linked to capex:

The metrics proposed in the incentive mechanism position paper may not be the most appropriate metrics to address compromised reliability, safety and quality of supply standards resulting from capex underspend.

The proposed metrics consider customer service outcomes which appear more closely linked to opex than capex. The distributors should reconsider revising the incentive metrics as part of this proposed mechanism so that they are more closely linked to capex.

CUAC also considered that it may be the case that a revised and strengthened Guaranteed Service Level (GSL) scheme could provide an appropriate check on capex underspend than a customer service incentive.

4.6.3 Customer views on reliability / price trade-offs

There appeared to be some support at the Joint Stakeholder Forum for the proposition that the gas DBs’ reliability performance is currently very high and stable over time, and that it is likely that customers are satisfied with existing reliability; and would be unlikely to see value in higher reliability. CUAC stated that recent research conducted by AGN found that customers “value the current standard of reliability”. CUAC, suggested therefore that a symmetrical customer service incentive mechanism may be unwarranted, as this would provide inappropriate incentives for gas DBs to increase reliability when this may not be valued by customers.

4.6.4 Analysis required to support customer service incentive design

CUAC stated that DBs could consider a stronger empirical basis for proposed customer service incentives:

.... (this should be) developed through transparent customer satisfaction research that examining willingness to pay for varying levels of service quality, or a rigorous value of customer reliability study.

Consumers need to be properly equipped to participate in these surveys and questions need to be framed appropriately to ensure consumers can provide an informed and meaningful response.

4.7 Network Innovation Incentives

4.7.1 The role of innovation

There was support for the proposition that network innovation is likely to promote the long-term interests of consumers. The ENA supported the need to incentivise innovation. CUAC stated that it “recognise(d) the value of innovation to develop further efficiencies to deliver benefits for DBs and their customers through lower prices.”

The ENA stated that:

It is widely accepted that the incentive for a regulated monopoly to invest in innovative projects is materially different to an unregulated business.

Gas is often referred to as ‘a fuel of choice’ because practical substitutes such as LPG and electricity are available.

Gas networks’ pricing decisions are, therefore, constrained by the risk of declining demand as customers may choose to substitute gas for alternative fuels. It can be argued that this provides gas businesses with greater incentives to innovate.

However, gas distributors are still regulated monopolies under the existing regime to which the CPI-X form of regulation is applied. There are a number of aspects unique to the existing regulatory regime that hinder investment in innovation by gas networks:

- an allowance for innovation is not included in the regulated forecasts;*
- revenues are reset shortly after the innovation (such that the benefits of that innovation are also passed through to consumers after a short period); and*
- due to the uncertainty of outcomes with innovation initiatives, it is often hard to demonstrate that the spend will satisfy the expenditure tests, and is therefore unlikely to be allowed by the regulator.*

4.7.2 How best to incentivise innovation?

The ENA considered that specific measures, such as the proposed Network Innovation Scheme (NIS) discussed in section 5.5 of the Issues Paper, would be desirable to ensure that optimal levels of investment in network innovation can be delivered.

CUAC considered however that it was unclear from the Issues Paper how gas DBs would financially account for the NIS. It was also unclear to them how the efficiencies that DBs uncover through innovation would be shared between them and their customers. CUAC considered that efficiency savings delivered through a CESS and EBSS might provide an adequate mechanism to finance innovation.

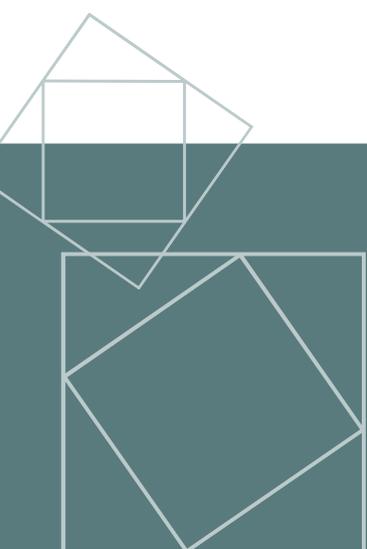
The AER said their understanding was that the UK experience with the NIS was that it was to promote carbon reduction and environmental objectives which may not be directly comparable to the focus on long term interests of consumers in the National Gas Law.

4.8 Increasing the power of incentives

There was little discussion in submissions on increasing the power of incentives. (See section 5.4 of the Issue Paper). CUAC considered a higher-powered incentive to underspend is inappropriate and may lead to the DBs pursuing excessive cost reductions at the expense of service quality.



Attachment A – Issues Paper



Issues Paper

Incentive Mechanisms for the Victorian Gas Distribution Businesses

2018 to 2022 Gas Access Arrangement Review

10 June 2016

Farrier Swier Consulting

Level 7, 330 Collins Street, Melbourne
Victoria 3000 Australia

Telephone 613 9612 1900

Facsimile 613 9612 1999

www.farrierswier.com.au

Disclaimer

This report has been prepared by Farrier Swier Consulting Pty Ltd (FSC) for the sole use of Multinet Gas, Australian Gas Networks and AusNet Services (the “businesses”). This report is supplied in good faith and reflects the knowledge, expertise and experience of the consultants involved. The report and findings are subject to various assumptions and limitations referred to within the report. Any reliance placed by a recipient of the report upon its calculations and projections is a matter for the recipient’s own commercial judgement. FSC accepts no responsibility whatsoever for any loss occasioned by any person acting or refraining from action as a result of reliance on the report.

Table of Contents

Guide to this Issues Paper	26
1. Introduction	27
1.1 Purpose of this Issues Paper	27
1.2 Overview of the economic and regulatory framework	27
1.3 Current incentive arrangements	28
1.4 Changed incentive arrangements the businesses are exploring	29
1.5 Matters not in scope	29
1.6 The structure of this Issues Paper	30
1.7 Stakeholder consultation	30
2. Summary consultation questions	32
3. Regulatory requirements for AER decisions on incentive arrangements	34
3.1 Rule 98 of the National Gas Rules	34
3.2 National Gas Law	35
3.2.1 The National Gas Objective	35
3.2.2 Relevant Revenue and Pricing principles	35
3.3 How should the AER assess incentive arrangement proposals?	37
3.4 Consultation questions	38
4. Economic and practical considerations for incentive framework design	39
4.1 Holistic approach to incentive design	39
4.2 Balancing incentives and benefits to customers	40
4.3 Even incentives for achieving efficiency gains through time	40
4.4 Balanced incentives to promote an efficient mix of inputs	41
4.5 Balancing incentives for cost reduction and service quality	42
4.6 Incentives for optimising service quality	43
4.7 Power of incentives	44
4.7.1 Power of incentives concept	44
4.7.2 High vs low powered incentives	44
4.7.3 How should the AER set the power of the incentive?	46

4.8	Incentives for network innovation	47
4.8.1	What is the role of gas distribution networks in innovation?	48
4.8.2	Innovation and the regulatory framework	48
4.9	Consultation questions	49
5.	Opportunities for promoting the long term interests of consumers	51
5.1	Opportunity for a more holistic approach	51
5.2	Capital Expenditure Sharing Scheme (CESS)	51
5.2.1	Potential problems with current arrangements	51
5.2.2	Opportunity for a CESS to address problems with current arrangements	52
5.2.3	Experience with CESS schemes	53
5.2.4	Key features of the AER's CESS	54
5.2.5	Consultation questions	55
5.3	Customer Service Incentive Scheme (CSIS)	56
5.3.1	Current arrangements	56
5.3.2	Features of a CSIS design	57
5.3.3	Opportunity for a CSIS to improve incentives	58
5.3.4	Consultation questions	58
5.4	Determining the power of the incentive to promote productivity improvement	59
5.4.1	Evidence and issues informing decisions on incentive power	60
5.4.2	Consultation questions	62
5.5	A Network Innovation Scheme (NIS)	62
5.5.1	Assessment approach	63
5.5.2	Consultation questions	63
6.	Summary of incentive arrangement framework and options	65
6.1	Consultation questions	66
	Appendix A - Capital Expenditure Efficiency Scheme design issues	67
	Appendix B - Customer Service Incentive Scheme Design issues	70
	Appendix C - Ofgem's network innovation measures for gas distribution businesses	72



Guide to this Issues Paper

This Issues Paper explores potential changes to incentive mechanism arrangements that the Victorian gas businesses could propose to the AER for their forthcoming access arrangement period. It aims to provide a basis for the businesses to undertake consultation with stakeholders on potential changes to incentive mechanism arrangements.

Readers who wish to gain a high level understanding of this Issues Paper should read Sections 1 (Introduction) and 2 (Summary of consultation questions).

The businesses will convene a stakeholder workshop on 11 July 2016 to discuss this Issues Paper. The workshop will be facilitated by FSC who will overview the Issues Paper and invite stakeholders to discuss the consultation questions listed in Section 2 and any other matters they consider relevant.

Further information about the workshop, including how to register, and contact details for the Victorian gas distribution businesses is provided in Section 1.7 below.

I. Introduction

Multinet Gas, Australian Gas Networks (**AGN**) and AusNet Services (**the businesses**) are the three gas distribution businesses providing gas distribution services to gas consumers in Victoria. The businesses are currently preparing their revised Access Arrangement (**AA**) and Access Arrangement Information (**AAI**) for their respective Victorian gas distribution networks for the forthcoming access arrangement period (2018 to 2022). The businesses must submit their access arrangement proposals and AAI to the Australian Energy Regulator (**AER**) by 31 December 2016.

This Issues Paper explores potential changes to incentive mechanisms that the businesses could propose to the AER for the forthcoming access arrangement period. It aims to provide a basis for the businesses to consult with stakeholders on potential changes to their incentive mechanisms. (See Section 1.7 below)

1.1 Purpose of this Issues Paper

The purpose of this Issues Paper is to:

- **Explore potential changes to the incentive mechanisms** that could be introduced in the forthcoming access arrangement period with a particular focus on the potential benefits and detriments that might accrue to customers.
- **Provide a basis for engagement with stakeholders** including:
 - assisting stakeholders to understand the background and key issues
 - assisting the businesses to understand stakeholders' views
 - providing input to the businesses for developing their proposed incentive arrangements that might be included in the AAI for the forthcoming regulatory period.

1.2 Overview of the economic and regulatory framework

The overarching objective of economic regulation of gas businesses in simple terms is to promote economic efficiency for the long term interest of consumers. (See section 3.2.1).

An important feature of Australian energy networks' regulation is the focus on economic incentives to promote efficiency for the long-term interest of consumers.

Regulated energy network businesses are generally subject to an ex ante five year determination of prices (or revenues) by the AER and other regulatory arrangements⁵. In simple terms, prices are set in advance by the AER and the businesses have an opportunity to benefit by working to reduce their cost below the costs assumed by the AER in setting prices. These arrangements provide incentives for businesses to seek out efficiencies, and also to generate information which enables the AER to share efficiencies with customers. Incentive regulation is also designed to leave day-to-day decision-making to the network business.⁶

However, this simple incentive design may create other incentives for businesses to behave in ways that overall do not promote efficiency. For example, unless it is carefully designed an incentive mechanism may provide uneven incentives for businesses to seek efficiencies over a regulatory period. Inappropriate incentives to cut costs may lead to undesirable reductions in service quality. The development of incentive regulation in Australia and in other jurisdictions has over time introduced a range of more sophisticated incentive arrangements that are designed to address such problems. They aim to provide a holistic package of incentives that work together to better promote efficiency for the long term interest of consumers.

The National Gas Rules (**NGR**) provide that an access arrangement may include (or the AER may require it to include) one or more incentive mechanism to further encourage efficiency in the provision of services by the service provider.⁷ Under the NGR, the AER has full discretion as to whether to approve the introduction of an incentive mechanism. The National Electricity Rules (**NER**) by contrast include clearer objectives and criteria, and more prescriptive requirements on the incentive arrangements the AER must apply to electricity distribution businesses.

1.3 Current incentive arrangements

In the current access arrangement period (2013 to 2017) the businesses are subject to an Operating Expenditure Incentive Mechanism (referred to as the Efficiency Benefit Sharing Scheme (**EBSS**))⁸. Other relevant schemes which promote efficiency for the long term interest of customers under the Victorian Gas Distribution System Code (System Code) are:

- Guaranteed Service Level (**GSL**) obligations⁹

⁵ For example, choices about the reference tariff variation mechanism (e.g. weighted average price cap, revenue cap) will create differing incentives for a regulated business.

⁶ See Chapter 5, *Electricity Network Regulatory Frameworks* Productivity Commission Inquiry Report, Volume 1 April 2013

⁷ Rule 98 of the NGR is set out and discussed in section 3.1 below

⁸ The EBSS was proposed by the gas distributors and approved by the AER for the current access arrangement period in accordance with Rule 98 of the NGR. The mechanism also applied in the previous 2008 to 2012 period.

⁹ Part E of Schedule 1 of the System Code.

- Benchmarks for unaccounted for gas (UAFG)¹⁰.

The AER has to date not approved any incentive mechanisms under the NGR other than the EBSS which applies to all other gas distributors across Australia.

However, the Essential Services Commission of Victoria (ESCV) applied an Efficiency Carryover Mechanism for the businesses for their 2003 to 2007 and 2008 to 2012 access arrangement periods. This provided the businesses with a financial reward (penalty) for achieving efficiency gains (losses) compared to both operating and capital expenditure benchmarks over the access arrangement periods. As discussed in section 4.3, the AER only maintained the operating expenditure component through the EBSS from 2013.

1.4 Changed incentive arrangements the businesses are exploring

The businesses are considering changing the incentive arrangements to be included in their access arrangement proposals for the forthcoming regulatory period. These may include changes to existing incentive mechanisms (including the EBSS) and the potential introduction of new incentive mechanisms. These changes are particularly informed by the incentive arrangements that currently apply to electricity distribution businesses in the National Electricity Market.

The specific proposals explored in this Issues Paper are:

- Retaining the EBSS framework and considering changes to its operation (in particular whether or not stronger incentives should be introduced)
- Including up to three new incentive mechanisms:
 - A Capital Expenditure Sharing Scheme (CESS)
 - A Customer Service Incentive Scheme (CSIS)
 - A Network Innovation Scheme (NIS).

1.5 Matters not in scope

This Issues Paper assesses the relative merits of the potential incentive mechanisms at a conceptual level having regard for the regulatory framework. It therefore does not:

- Propose the detailed design of the potential incentive mechanisms, although it does suggest key considerations and desirable attributes for designing incentive mechanisms

¹⁰ Part C of Schedule 1 of the System Code.

- Assess the possible revenue or price impacts of the application of the potential incentive mechanisms for the businesses and their customers.

Because it only focuses on incentive mechanisms that the businesses may propose to the AER under Rule 98 of the NGR, this Issues Paper does not:

- Examine the existing GSL and UAFG arrangements that are prescribed in the System Code
- Reference tariff variation mechanisms that the businesses must include in their access arrangement under Rule 97 of the NGR.

1.6 The structure of this Issues Paper

The remainder of this paper is structured as follows:

- Section 3.2 lists the consultation questions on which stakeholders' feedback is sought
- Section 3 suggests how the AER should assess incentive mechanism proposals under the regulatory framework
- Section 4 details key economic and practical considerations for incentive mechanism design and identifies the theoretically desirable attributes of an incentive framework
- Section 5 examines how the proposed incentive mechanisms could contribute to better promoting the long-term interest of consumers
- Section 6 summarises which specific incentive mechanisms or design features contribute to promoting the theoretically desirable attributes of an incentive framework (discussed in section 4).

1.7 Stakeholder consultation

The businesses will hold a joint forum at the RACV Club on Monday, 11 July 2016. Details of the forum are as follows:

What: Victorian Gas Distributors' Stakeholder Forum on Incentive Mechanisms

When: 10.00am - 1.00pm on Monday, 11 July 2016. Tea and coffee will be available on registration from 9.30am, and a light lunch will be provided at the end of the event.

Where: RACV Club, 501 Bourke St, Melbourne

RSVP: Please email samantha.porter@ue.com.au by Monday, 27 June 2016

Consultation questions are identified throughout this Issue Paper and are summarised in section 2. However, stakeholders are encouraged to provide feedback on any issue they consider relevant. Outcomes from consultation will be considered by the businesses in developing their access arrangement proposals.

Stakeholder submissions should be addressed to:

Jai McDermott, General Manager Corporate Affairs, United Energy and Multinet Gas

Email: jai.mcdermott@ue.com.au

Address: 6 Nexus Court, Mulgrave VIC 3170

by 5pm on 29 July.

Stakeholders that have questions about this Issue Paper that they wish to discuss with individual businesses should contact the following:

Contact details for questions about this Issues Paper:

Multinet Gas

Jai McDermott

Contact details as above

Australian Gas Networks

Craig de Laine, General Manager, Regulation

Craig.deLaine@agnl.com.au

Tel: 08 8418 1129

or

Peter Bucki, Manager Regulatory Strategy

Peter.Bucki@agnl.com.au

Tel: 08 8418 1112

AusNet Services

Sarah Connolly, Customer Engagement Manager

AusNet Services

Sarah.Connolly@ausnetservices.com.au

Mobile: 0412 657 962

Tel: 03 9695 6795,

2. Summary consultation questions

This section summarises the consultation questions identified in this Issues Paper. These questions are relevant to any changes to incentive mechanisms the businesses could propose to the AER and how the AER might consider them.

The response to some consultation questions may raise complex issues and therefore it is not expected that stakeholders will necessarily have a response to each question.

However by setting out the questions in full we aim to promote open and transparent discussion.

Q1. How should the AER assess incentive arrangement proposals included in gas distribution AA and AAI proposals?

- Is the suggested approach in Box 1 (see section 3.3 below) for how the AER should consider incentive mechanism arrangements reasonable?
- Are there any other matters that the AER should consider?

Q2. Do stakeholders agree with the theoretically desirable attributes of an incentive framework set out in Box 3 (see section 4.9)?

- Should there be flexibility to set powers of incentive that are different between gas businesses?
- Are there other theoretically desirable attributes of an incentive framework?

Q3. Would introducing a Capital Expenditure Efficiency Sharing Scheme (CESS) be desirable?

- In particular:
 - Is a CESS required to incentivise the business to continuously spend capital efficiently over the period?
 - Is a CESS required to avoid distorting the businesses' capital and operating expenditure decisions?
 - Is aligning the incentive power (sharing factor) of the existing EBSS with the CESS beneficial / necessary? How important is this?
 - Are there any other issues of principle that should be considered?
- Should the CESS be introduced in the forthcoming or the subsequent access arrangement period?
- What specific design features should be considered?
 - Should all categories of capital expenditure be included in the CESS, or are there some categories that should initially be excluded, and if so, why?

- Should there be an adjustment mechanism for material deferred capital expenditure?

Q4. Would introducing a Customer Service Incentive Scheme be desirable in principle?

It is likely that the outcome of detailed customer research will be a key input into decisions on whether a CSIS would be beneficial in promoting the NGO. Noting this, stakeholder feedback is sought on the following issues of principle in considering whether or not a CSIS might be beneficial.

- Does the current regulatory framework create incentives for cost reduction to the detriment of service quality?
- Are there benefits in encouraging businesses to optimise service quality as occurs in electricity distribution through the STPIS?
- If there was a decision to introduce a CESS does the existing (or an amended) GSL provide incentives to balance service quality with cost reductions, or is a CSIS required?
- Do you agree with the types of measures to be included in a CSIS? What other measures should be included in the CSIS?

Q5. Should the AER approve higher-powered incentives?

- Has the rate of productivity growth for the Victorian gas distribution business converged on the long run rate of technological change? Is the evidence for this convincing?
- Do the Victorian gas distribution businesses need greater incentives to achieve further efficiencies and higher productivity growth (consistent with the NGO)?
- Are there material risks arising from increasing the power of incentives? Are these risks manageable?

Q6. Is a new regulatory incentive required for the Victorian gas businesses to pursue innovation, or are the current arrangements sufficient?

- Is there a problem - under the status quo, is it likely that the businesses may be slow to deliver innovation that would promote the NGO?
- Would introducing a CESS sufficiently promote innovation or is a Network Innovation Scheme (NIS) required in addition?
- Is promoting innovation best addressed through a regulatory incentive introduced under Rule 98, through other government policies or agencies and/or through rules development by the AEMC?

Q7. Is the summary of incentive mechanism options and linkages in Table 1 reasonable? (see section 6). Are there any changes suggested?

3. Regulatory requirements for AER decisions on incentive arrangements

This section suggests how the AER should assess incentive arrangement proposals based on the relevant parts of the NGR and the National Gas Law (NGL).

3.1 Rule 98 of the National Gas Rules

Rule 98 of the NGR sets out the following requirements for the AER's decisions on incentive mechanisms:

- (1) A full access arrangement may include (and the AER may require it to include) one or more incentive mechanisms to encourage efficiency in the provision of services by the service provider.*
- (2) An incentive mechanism may provide for carrying over increments for efficiency gains and decrements for losses of efficiency from one access arrangement period to the next.*
- (3) An incentive mechanism must be consistent with the revenue and pricing principles.*

This Rule provides full discretion¹¹ to the AER on making decisions about incentive arrangements. The Rule provides only high level guidance to the AER and unlike Chapter 6 of the National Electricity Rules it does not:

- refer to specific incentive mechanisms
- require the AER to develop and publish specific incentive mechanisms
- specify how incentive mechanisms must be developed and implemented.

¹¹ Section 40, National Gas Rules Version 29. Full discretion means that the AER has a discretion to withhold its approval to an element of an access arrangement proposal if, in the AER's opinion, a preferable alternative exists that (a) complies with applicable requirements of the Law; and (b) is consistent with applicable criteria (if any) prescribed by the Law.

3.2 National Gas Law

3.2.1 The National Gas Objective

The NGL requires that the AER must perform or exercise its functions or powers (in this case making decisions on incentive mechanisms) in a manner that “will or is likely to contribute to the achievement of the National Gas Objective” (NGO).¹²

The NGO is to:

*promote efficient investment in, and efficient operation and use of natural gas services for the long term interest of consumers of natural gas with respect to **price, quality, safety, reliability** and **security of supply** of natural gas.*¹³

The relevant aspects of distribution services where incentive mechanisms could promote efficiency for the long term interest of consumers are in relation to **price, quality, safety** and **reliability** of gas distribution services.

Gas safety is a high priority for the businesses and is subject to a range of specific legislative and regulatory requirements. The businesses are already subject to strong incentives to achieve gas safety. It is important that incentives for cost reduction should not be so strong that they outweigh the existing incentives to achieve gas safety.

Security of supply is not a directly relevant consideration for gas distribution services (as it relates to questions concerning the upstream gas industry and gas transmission).

3.2.2 Relevant Revenue and Pricing principles

As noted Rule 98 requires that the AER must take into account the revenue and pricing principles (RPPs) when exercising discretion in “approving or making those parts of an access arrangement relating to a reference tariff”.¹⁴

The RPPs are set out in section 24 of the NGL. The AER in past decisions¹⁵ on incentive mechanisms proposed by gas businesses has stated that the following RPP is, in its view, the most relevant:

¹² Section 28 (1) (a) NGL

¹³ Section 23 NGL

¹⁴ Section 28 (2) NGL

¹⁵ AER Final Decision, Jemena Gas Networks (NSW) Access Arrangement 2015-20, November 2015, Attachment 9, Efficiency carryover mechanism, p. 9-7 ;; and Attachment 14 – Other Incentive schemes, AER Draft decision, Australian Gas Networks Access Arrangement, p. 14-7

A service provider should be provided with effective incentives in order to promote economic efficiency with respect to reference services the service provider provides. The economic efficiency that should be promoted include –

- (a) **efficient investment** in, or in connection with, **a pipeline** with which the service provider provides reference services; and*
- (b) the **efficient provision of pipeline services**, and*
- (c) the efficient use of the pipeline.¹⁶*

The AER's past consideration of incentive mechanisms has focused on incentives for efficient investment and the efficient provision of pipeline services.¹⁷

AGN has noted that other potentially relevant RPPs for the purposes of assessing incentive arrangements proposals are¹⁸:

A service provider should be provided with a reasonable opportunity to recover at least the efficient costs the service provider incurs in –

- (a) providing reference services; and*
- (b) complying with a regulatory obligation or requirement or making a regulatory payment.¹⁹*

A reference tariff should allow for a return commensurate with the regulatory and commercial risks involved in providing the reference service to which that tariff relates.²⁰

Regard should be had to the economic costs and risks of the potential for under and over investment by a service provider in a pipeline with which the service provider provides pipeline services.²¹

The RPP make it clear that the regulatory framework is explicitly incentive-based. Not all incentives need to be in the form of incentive mechanisms. Incentives can also, for example, be reflected in how a business's regulatory asset base is determined, how the building blocks are determined in setting its revenue allowance and how a business's control mechanism (reference tariff variation mechanism) is structured. However, incentive mechanisms can play an important role in complementing and reinforcing

¹⁶ Section 24(3) NGL

¹⁷ Efficient use of pipelines generally concerns the design of tariffs and the efficient recovery or revenue over time which are not matters generally considered in discussion of incentive schemes.

¹⁸ Australian Gas Networks, Access Arrangement Information for Australian Gas Networks South Australian Natural Gas Distribution Network, July 2015, p. 189.

¹⁹ Section 24(2) NGL

²⁰ Section 24(5) NGL

²¹ Section 24(6) NGL

other elements of the regulatory framework in order to promote both the RPPs and the NGO.

3.3 How should the AER assess incentive arrangement proposals?

Based on the matters discussed above, Box 1 sets out our suggested approach for how the AER should consider incentive arrangement proposals taking account of the NGL, the NGR and good regulatory practice.

Box 1: How the AER should assess proposed incentive mechanisms.

3. The NGO and certain RPPs provide the principle guidance to the AER for assessing incentive mechanisms included by a gas business in a proposed access arrangement information (or for the AER to require an incentive arrangement to be included).
4. Incentive arrangements should promote efficiency for the long-term interest of consumers with respect to **price, quality, safety** and **reliability** of gas distribution services.
5. Gas safety is a very high priority and the businesses are subject to strong incentives to maintain high standards of gas safety (due to the application of a range of relevant laws). Nonetheless, incentives for cost reduction should not be so strong that they risk outweighing the existing incentives to achieve high standards of gas safety.
6. Noting that the AER has full discretion in assessing incentive mechanisms, the AER should adopt good regulatory practice which means that it should exercise its discretion in a way that is likely to promote the NGO to the greatest degree. Where there are choices between different incentive mechanisms then the AER should select the mechanisms that are likely to promote efficiency for the long-term interest of consumers to the greatest degree.
7. In exercising its discretion to accept proposed incentive mechanisms (or require them to be included in an AA) under Rule 98 of the NGR, and given the absence of detailed guidance provided by the NGR, it would be good regulatory practice for the AER to consider:
 - a) Regulatory precedents for developing and assessing incentive mechanisms in Australia and other comparable jurisdictions, such as the United Kingdom including:
 - The rules governing incentive mechanisms established for electricity distribution businesses in Chapter 6 of the National Electricity Rules (NER)
 - Decisions made on implementation of particular incentive mechanisms including those for electricity distribution business pursuant to Chapter 6 of the NER

- b) The specific circumstances of the Victorian gas businesses including how they are similar or different to other similar businesses including electricity distribution business and gas distribution businesses in other jurisdictions
- c) Whether and how a proposed incentive mechanism complements and reinforces other incentive mechanisms and other elements of the regulatory framework in a way that promotes the RPPs and NGO.

3.4 Consultation questions

Q1. How should the AER assess incentive arrangement proposals included in gas distribution AA and AAI proposals?

- Is the suggested approach in Box 1 for how the AER should consider incentive mechanism arrangements reasonable?
- Are there any other matters that the AER should consider?

4. Economic and practical considerations for incentive framework design

Incentive regulation has a relatively long history and there is now significant theoretical and practical experience in Australia and internationally. This section sets out key economic and practical considerations for incentive framework design and identifies the theoretically desirable attributes of an incentive framework.

These considerations form the basis for the next section which identifies potential opportunities for changes to incentive mechanisms which could promote the long-term interests of consumers of gas distribution services.

4.1 Holistic approach to incentive design

An important insight from the literature and practical experience with incentive regulation is that a holistic view is required to the design of a regulatory regime. Incentive design should not focus on just one, amongst many, desirable incentives. Sappington and Weisman²² state:

The key to success in designing effective incentive regulation is relatively simple: Anticipate all of the incentives that will ultimately come to bear, and structure regulatory policy in advance to limit any adverse incentives.

Such a holistic approach has emerged over time in electricity network regulation in Australia and the United Kingdom.

For example, for electricity distribution regulation the NER require that the form of price control for standard control services mechanism “must be of the prospective CPI minus X form...”²³ and there are now a range of complementary incentive mechanisms that have been (or could be implemented) aimed at limiting adverse incentives.

These include:

Mandated incentive mechanisms:

- **an efficiency benefit sharing scheme (EBSS)** - to incentivise a business to pursue continuous operating expenditure efficiency improvements over time and to share the benefits of these improvements fairly with consumers

²² Sappington, David E. M. and Dennis L. Weisman (2005), ‘Self-Sabotage’, *Journal of Regulatory Economics*, 27(2), pp. 155-175. Cited in ‘The fifty most important papers in the economics of regulation’, Darryl Biggar Working Paper No. 3, May 2011, ACCC/AER Working paper Services

²³ Sec 6.2.6 of the NER

- a **service target performance incentive scheme** - to incentivise a business to maintain or improve service standards and to limit the risk of cost reduction incentives causing service standards to decline over time.

Optional incentive mechanisms, including:

- a **capital efficiency sharing scheme (CESS)** - to incentivise a business to pursue capital expenditure efficiency improvements over time and to share the benefits of these improvements fairly with consumers
- a **demand management incentive scheme (DMIS)** - to include in a business's revenue allowance a provision for expenditure to enhance its knowledge and experience with non-network alternatives. It also includes a mechanism to compensate a business that operate under a weighted average price cap for any foregone revenue resulting from demand management initiatives approved under the DMIS
- a **small-scale incentive scheme** - to provide a business with another targeted incentive to promote the National Electricity Objective (NEO), although the AER has not yet applied this scheme.

4.2 Balancing incentives and benefits to customers

The overarching purpose of network regulation is to limit the ability of network businesses to earn monopoly rents while also regulating in a way that incentivises them to be efficient. In designing incentive mechanisms, the AER must implicitly or explicitly decide how to share the benefits of increased efficiency between the business and consumers that strikes balance between these objectives.

4.3 Even incentives for achieving efficiency gains through time

It has long been understood in Australian and international economic regulation that the CPI minus X form of regulation can lead to uneven incentives to achieve efficiency gains through a regulatory period. A business has the strongest incentives to achieve efficiency gains at the beginning of regulatory period, because it can keep any cost savings achieved for the full five years; whereas it has very little incentive to achieve efficiency gains in the last year of a regulatory period, because it has little time left to benefit from any cost savings.

The ESCV applied an Efficiency Carryover Mechanism (**ECM**) for gas distribution businesses for the 2003 to 2007 and 2008 to 2012 access arrangement periods. The ECM provided businesses with a financial reward (penalty) for achieving efficiency gains (losses) compared to both operating and capital expenditure benchmarks over the access arrangement periods. As it explained in its Final Decision for the 2008 to 2012 access

arrangement period, the ESCV aimed to create even incentives for businesses to achieve efficiency gains through the period²⁴:

The ECM was designed to provide the distributors with a continuing incentive to pursue efficiency gains throughout the regulatory period and to reduce the incentive to defer the pursuit of efficiency gains that might otherwise exist immediately before a regulatory review. Under the building block approach if an ECM was not in place a distributor has a greater incentive to pursue efficiency gains in the first years of the regulatory period as it will receive the benefit of the efficiency gain until the end of that regulatory period. Conversely, in the absence of an ECM, there is an incentive on the distributors to defer any potential efficiency gains at the end of the regulatory period until the next regulatory period in order to receive a greater benefit.

The ECM allows for the efficiency gain (loss) achieved by the distributor to be retained for a further five years following the year in which the efficiency gain (loss) is made. This approach provides the same reward (penalty) for an efficiency gain irrespective of the year in which that particular gain (loss) was made.

The ECM has evolved into the EBSS currently applied by the AER for electricity and gas businesses, albeit that the AER dropped the capital expenditure component of the mechanism in applying it to the Victorian gas distribution businesses for the current 2013 to 2017 access arrangement period.

As with the ESCV's previous ECM, the current EBSS applying to the gas businesses allows them to retain the benefit of an operating expenditure efficiency gain (or loss) for a five-year period regardless of when that efficiency gain (or loss) is achieved.

A CESS has been developed by the AER and has recently been applied to electricity distribution businesses. No CESS currently applies to gas businesses.

4.4 Balanced incentives to promote an efficient mix of inputs

Gas distribution services are provided through a mix of operating and capital inputs. A business may be able to choose between capital solutions that are higher cost but minimise operating expenditure (for example for monitoring and maintenance works), or a lower cost capital solutions but with consequentially higher operating expenditure. An example of a practical question for a gas business currently is the extent it should invest in technology (which can be capitalised) with resulting operating expenditure savings. Another consideration may be that operating expenditure can be adjusted relatively quickly and therefore provide more flexibility to adjust costs to changing conditions while capital expenditure is often long-lived and can therefore be economically adjusted more slowly.

²⁴ ESCV (2008), Gas Access Arrangement Review 2008-2012 – Final Decision – Public Version, 7 March 2008, p. 570

If there is a material range of choices available to a gas business between operating and capital expenditure, then an ideal incentive arrangement would encourage the business to choose the most technically and commercially optimal mix of operating and capital inputs. Put another way, the regulatory framework should ideally not significantly distort efficient business decision making.

Joskow states that “Ideally, a comprehensive incentive regulation mechanism that consistently integrates all cost and quality relationships at a point of time and over time would be applied” but also acknowledges “that as a practical matter this often places very challenging information and implementation burdens on the regulator.”²⁵

This potential interaction between the operating and capital expenditure efficiency is recognised in the NER. In developing the CESS, the AER was required to take into account “the interaction of the scheme with other incentives that DNSPs may have in relation to undertaking efficient operating or capital expenditure.”²⁶

4.5 Balancing incentives for cost reduction and service quality

A well understood challenge in incentive regulation design is balancing incentives for cost reduction and achieving appropriate service quality. Joskow²⁷ states that:

Any incentive regulation mechanism that provides incentives only for cost reduction also potentially creates incentives to reduce service quality when service quality and costs are positively related to one another.

Chapter 6 of the NER requires that the AER must develop and publish a service target performance incentive scheme (STPIS) to provide incentives for electricity distributors to “maintain and improve (service quality) performance.”²⁸ One of the matters that the AER must consider in developing and implementing a STPIS is “the need to ensure that the incentives are sufficient to offset any financial incentives the DNSP may have to reduce costs at the expense of service levels.”²⁹

Other factors that the AER must consider in developing the STPIS include:

²⁵ *Incentive Regulation in Theory and Practice: Electricity Distribution and Transmission Networks*, Paul L Joskow, MIT, January 21, 2006 p. 18

²⁶ Section 6.5.8A (d) (1) NER

²⁷ *Incentive Regulation in Theory and Practice: Electricity Distribution and Transmission Networks*, Paul L Joskow, MIT, January 21, 2006 p. 30. Daryl Biggar states that this is one of the best survey articles on the theoretical and practical issues associated with incentive regulation. *The fifty most important papers in the economics of regulation*. Darryl Biggar, Working Paper No. 3, May 2011, ACCC/AER Working paper series.

²⁸ Section 6.6.2 of the NER

²⁹ Section 6.6.2 (b) (3) (v)

- the need to ensure that benefits to electricity consumers likely to result from the scheme are sufficient to warrant any reward or penalty under the scheme to DNSPs
- the willingness of the consumer or end user to pay for improved performance in the delivery of services.

The AER's consideration of these matters is reflected in its decisions on the revenue at risk, performance parameters and targets and incentive rates (including the value of customer reliability (VCR) values) for applying the STPIS to each electricity distributor.

In gas distribution regulatory decisions, the AER has recognised the need to balance incentives for cost reduction with incentives to maintain or improve service quality. For example, the AER did not approve AGN SA's recent proposal for a CESS in part because of the "absence of an existing framework for service level (reliability) performance and a corresponding lack of time series data...this is a significant barrier to introducing a CESS for AGN at this time."³⁰

4.6 Incentives for optimising service quality

Currently, the businesses apply a GSL scheme under the System Code which provides for payments to individual customers if certain service targets are not met. These targets cover four areas: appointments, connections, repeat interruptions and lengthy interruptions. The current GSL scheme is discussed further in section 5.3.1.

A GSL scheme provides an incentive for the business to meet the defined service levels. Provided customer payments are set high enough (relative to any avoided costs to the business of not meeting the target) then the business will have incentives to meet the GSL targets.

A GSL scheme however does not itself provide information on whether the service performance targets themselves are 'right' (that is, are optimally allocatively efficient). A GSL scheme does not promote changes in service performance outcomes to better align with the value of service improvement to customers. Nor are such schemes dynamically efficient, as they do not recognise changing opportunities arising from technology change.

For example, a new technology opportunity may enable a business to improve its level of service for one performance parameter (such as telephone response times) at a much lower marginal cost which is materially less than the value to customers of that improved service performance. A regulator does not have this information in setting the GSL targets, and the business has little incentive to discover this information.

Instead, a well-designed incentive mechanism can mimic how competitive markets operate and provide an incentive to the business to discover the optimal level of service

³⁰ AER Draft decision, Australian Gas Networks Access Arrangement 2016 to 2021, Attachment 14 - Other Incentive schemes, November 2015 p. 14-2

itself. The scheme can be dynamic with the revised targets in the next regulatory period being set based on actual outcomes achieved. The regulator thereby only needs to make a decision on the level of the incentive that should be applied to each component of the scheme.

An incentive-based scheme has the advantage that it promotes discovery of marginal cost and customer value, and provides flexibility to the business to change service quality outcomes so that they better reflect customer value. Incentive-based schemes operate successfully for electricity distribution. However, they can be complex to design and can involve significant establishment costs. (see section 5.2.2).

4.7 Power of incentives

This section discusses the concept of the “power of incentives”, the arguments for and against high or low-powered incentives, and how the power of incentives might be set in future by the AER.

A key conclusion is that when the AER sets the power of incentives it needs to balance the need to provide adequate incentives for managerial effort while minimising the risks of excessively high-powered incentives.

4.7.1 Power of incentives concept

Under an ex ante price cap³¹, prices are fixed for the regulatory period and vary based only on factors outside of the control of the business (for example CPI, defined cost pass through events etc.). An EBSS can be added to this arrangement to share between the business and its customers the benefits of efficiencies achieved (or the costs of inefficiencies). A decision is required on the sharing ratio for allocating efficiency benefits (or inefficient costs) between consumers and the business. This is also referred to as a decision about the power of the incentive.

4.7.2 High vs low powered incentives

The main reason identified in the economic regulation literature for adopting higher-powered incentives is that it increases the returns to the firm and its managers for managerial effort, and thereby encourages closer attention to costs and faster rates of productivity improvement including through increased innovation. Higher productivity should over time be embedded in the revealed cost base (both for the individual firm and the sector, and the benefits passed through to customers through lower prices over time.

³¹ Or revenue cap whereby prices are adjusted annually for under and over recovery of revenue as well as factors outside of the control of the business.

Higher-power capital efficiency incentives may also offset incentives for a business to seek to include inefficient capital expenditure in its regulatory asset base.

The argument for higher-powered incentives may be more cogent where a business is operating at or close to the efficiency frontier where achieving further efficiencies gains are more challenging, and greater managerial effort and investment in innovation may be required.

However, there are a number of countervailing reasons given in the economic regulation literature for why a regulator may adopt lower powered incentives.

Firstly -powered incentives may test the ability of the regulatory authorities to commit to the regulatory regime, if the regulated business can reduce its costs and earn substantial apparent excess returns.³² Arguably, this may be a lesser concern in a mature and well-functioning regulatory regime where the risk of high excess profits is low; or where the regulator authorities have sufficient credibility with their stakeholders such that they can be expected to maintain their commitment to the regulatory regime in the event that a businesses does earn substantial apparent excess returns for a period of time.

Secondly a higher-powered incentive may lead to a regulatory regime that is unsustainable because of the greater risk on the regulated firm.³³ Financial distress may increase the risk of the regime being renegotiated, with that renegotiation initiated either by the government or the regulated business.

Thirdly, higher-powered incentives on some desirable objectives may distort the efforts of the business to concentrate on those objectives (such as reducing costs) at the expense of other desirable objectives (such as maintaining service quality).³⁴ Even if there are balancing incentives to offset this effect (for example through a service performance incentive scheme) regulators may choose to limit the power of incentives in case there are errors in the design of the mechanism that result in service performance declining. This would limit any harmful impacts on customers.

Fourthly, higher-powered incentives might give rise to greater incentives for the regulated business to behave strategically at regulatory reviews to induce the regulator to reduce the performance targets (e.g. set higher cost targets).³⁵

³² 'Designing Superior Incentive Regulation', David Sappington and Dennis Weisman, Public Utilities Fortnightly, 15 February 1994 and 1 March 1994. Cited in Biggar.

³³ Designing Superior Incentive Regulation', David Sappington and Dennis Weisman, Public Utilities Fortnightly, 15 February 1994 and 1 March 1994. Cited in Biggar.

³⁴ Designing Superior Incentive Regulation', David Sappington and Dennis Weisman, Public Utilities Fortnightly, 15 February 1994 and 1 March 1994. Cited in Biggar.

³⁵ Designing Superior Incentive Regulation', David Sappington and Dennis Weisman, Public Utilities Fortnightly, 15 February 1994 and 1 March 1994. Cited in Biggar.

4.7.3 How should the AER set the power of the incentive?

The current EBSS has the effect of allowing gas businesses to retain about 30% of the efficiency gain (or loss) achieved at any time within the regulatory period and customers receiving the remaining 70%. Box 2 discusses the background to this arrangement. The power of the EBSS has remained constant since it was first introduced around 15 years ago.

Box 2: Background to the setting of the EBSS 30-70% sharing ratio

Historically, the basis of the carryover period for calculating the EBSS has been set to the regulatory period (typically five years). The outworking of this is that the business retains efficiency gains for a five year period, with customers benefiting from the efficiency gains thereafter. Mathematically, this equates to the business receiving 30% of the net present value (NPV) of the total benefit.³⁶

Given this background, attempting to characterise the current EBSS sharing ratio on the spectrum between high and low powered is not helpful. Rather, it is more helpful to think about the issue in terms of what the future direction of change (if any) should be (i.e. to retain the current sharing ratio or make the EBSS more or less high powered).

Setting the Power of the Incentive

In practice, setting an optimal power of the incentive cannot be done with any precision because of all the many inherent uncertainties related to the mechanism, including understanding the responsiveness of managers and the business to changes in the share of efficiency gains they retain.³⁷ The UK regulator OFGEM has noted that there is no exact science to determining optimal incentive rates.

Perhaps the only practical way for the AER to set the power of incentive over time is through learning (i.e. trial and error) and making carefully calibrated adjustments to enable risks to be managed. In practical terms this means the AER could:

- Review the outcomes that appear to be achieved by the current incentive arrangements and consider the balance of benefits and risks of change;
- If there is a case for change, make carefully calibrated directional changes towards the new desired sharing ratios;
- Review the effect and make further adjustments in future if considered appropriate; and
- Review regulatory developments in other jurisdictions.

³⁶ By way of comparison, we understand that the network businesses in the United Kingdom can receive up to 65% of the NPV of the total benefit under their equivalent operating expenditure incentive scheme.

³⁷ Pg. 190, Electricity Network Regulatory Frameworks Productivity Commission Inquiry Report, Volume 1 April 2013

Should there be flexibility to set powers of incentive that are different between businesses?

Currently, the AER sets the same incentive mechanism for the EBSS for all electricity and gas distribution businesses with the same duration of regulatory period.

OFGEM however considers that incentive rates will (or should) vary across companies.³⁸ This raises an issue as to whether, and in what circumstances, there is a case for treating businesses differently with regard to setting of sharing ratios.

Arguments for flexibility in setting different sharing ratios include:

- Different businesses may have different opportunities for efficiency improvement depending on their efficiency performance relative to the efficient frontier.
- Different businesses may have different levels of risk and uncertainty on cost saving opportunities.
- Setting different incentive rates may generate useful information and insights that better inform the AER on setting sharing ratios in the future.
- Allowing variation in incentive rates may better manage some of the risks (including regime sustainability and regulatory commitment risk) from increasing the incentive power, compared to changing incentive powers for all businesses across the board.

4.8 Incentives for network innovation

Emerging questions are being debated in economic regulation policy about whether businesses have appropriate incentives for network innovation.

OFGEM has put significant emphasis on innovation, as part of its new framework for network regulation called RIIO³⁹. (RIIO stands for Revenue = Incentives+ Innovation + Outputs). A key driver for OFGEM has been the emergence of smart grids for electricity distribution and transmission, and the adaptation of a low carbon future for the electricity and gas sectors.

Although Australian public policy has a significant focus on innovation, to date there have not been significant changes in network economic regulation practice to focus on innovation objectives, as seen in the UK.

This section discusses economic framework questions concerning innovation.

³⁸ Ofgem 2010, "Handbook for Implementing the RIIO model", October 2010, p. 84.

³⁹ RIIO - a new way to regulate energy networks for all gas and electricity customers, Ofgem, Factsheet 93, October 2010

4.8.1 What is the role of gas distribution networks in innovation?

Innovation involves entrepreneurship by businesses, including primary research by publicly and privately-funded research organizations into anything that reduces costs or improve outcomes (e.g., service quality, safety, environment). Innovation can range in a spectrum from:

- Speculative and risky research into “break through” discoveries
- Discovery of incremental improvements in existing technologies, materials, and managerial processes, including trialling of these within a business’s context
- Investigation by businesses of whether to adopt emerging but as yet unproven innovations.

Innovation activities undertaken by gas distribution businesses as part of normal day-to-day business would typically be in the third category, and possibly the second category (where innovations developed outside a business need to be tested and trailed in a business context). However, in the case of the first category, if a gas business had an idea about some promising “break through” technology with broad commercial application, there would likely be other avenues by which this should be funded than a regulatory network innovation allowance.

It is reasonable to expect that the long-term interest of consumers will be promoted by gas distribution businesses undertaking some level of expenditure in each regulatory period on certain innovation activities. It would be surprising if the optimal level of innovation expenditure by gas distribution businesses was zero.

4.8.2 Innovation and the regulatory framework

In theory the regulatory framework should encourage businesses to invest in innovation in the long-term interest of consumers to the extent that the expected commercial benefits across the portfolio of innovation activities align with the benefits that the business retains under any operating and/or capital expenditure efficiency sharing mechanism. This will depend on the power of the incentive – that is, the per cent of any efficiency gain/loss that the business retains.

This suggests that relatively low-risk or high-return applied innovations with short pay-back periods should be encouraged at least to some extent by the current regulatory framework, and may be further encouraged with the introduction of a CESS.

It is not clear however that the current regulatory framework will mimic the operation of competitive markets where a business can potentially create and maintain competitive advantage over its competitors for significant periods of time; or is sufficiently dynamic to recognise the emerging future uncertainties and changes facing the gas distribution industry.

Ofgem⁴⁰ identified the following concerns with the UK regulatory regime (which prior to the introduction of RIIO was similar to Australia's current regime).

In terms of the quantum of innovation, network companies may be slow to deliver the amount required, or deliver within the required timescales, for a variety of reasons including:

- *the company may not take account of all the benefits from innovation that accrue to a wide range of parties as they consider the relative merits of innovations;*
- *the upfront costs of innovation may be significant;*
- *the long-term private cost to network companies from choosing not to innovate may not be significant because the costs associated with continuing to deploy existing technologies are generally funded under a price control; and*
- *network companies may discount the future benefits of innovation to facilitate a low carbon energy sector if the carbon price is low or they doubt the political commitment to meet the targets.*

Possible changes to the regulatory framework are only one potential public policy response to any concerns about the incentives for innovation. Other possible complementary responses, (some of which may already be available to the gas distribution business) include:

- Public research funding.
- Allocation of research budgets by bodies such as Cooperative Research Centres, Universities and the CSIRO.

4.9 Consultation questions

Box 3: Theoretically desirable attributes of an incentive framework – summary

The theoretically desirable attributes of an incentive framework are that it should: -

- 1 Strike an appropriate balance between incentives for business to be efficient and passing efficiency gains back to customers.
- 2 Promote even incentives for businesses to achieve efficiency gains in each year of a regulatory period.
- 3 Provide balanced incentives for the business to choose an efficient mix of capital and operating cost inputs.

⁴⁰ Ofgem *Regulating Energy Networks for the Future: RPI-X@20 Emerging Thinking – A Specific Innovation Stimulus*, January 2010, p. 2.

- 4 Provide a balance between incentives for cost reduction and maintaining or improving service quality.
- 5 Provide incentives to the business to optimise service quality if there are material opportunities to do so.
- 6 Set the power of incentives that balances the need to provide adequate incentives for managerial effort while minimising the risks of excessively high powered incentives.
- 7 Provide suitable incentives for innovation by setting appropriate powers of incentives in the expenditure efficiency sharing mechanisms. If these fail to provide sufficient incentives for efficient network innovation then introduce other incentive mechanisms, such as a network innovation allowance.

In the process of developing actual incentive mechanisms to be applied to a business, these theoretical principles need to be balanced with practical implementation and ongoing administration challenges.

Q2 Do stakeholders agree with the theoretically desirable attributes set out in Box 3?

- Should there be flexibility to set powers of incentive that are different between gas businesses?
- Are there other theoretically desirable attributes of an incentive framework?

5. Opportunities for promoting the long term interests of consumers

As noted above, the only incentive mechanism that currently applies to the Victorian gas businesses under Rule 98 of the NGR is the EBSS (GSL and UAFG incentives also apply under the System Code).

This section assumes that the EBSS will continue to apply and, as such, does not discuss the merits of the scheme in detail. Rather, it discusses potential opportunities for expanding and changing the incentive mechanisms under Rule 98 to better promote the long-term interest of consumers. Further detail and issues on each incentive mechanism are set out in subsequent sections and appendices of this Issues Paper.

5.1 Opportunity for a more holistic approach

Section 4.1 discussed how the literature and practical experience with incentive regulation emphasises the need for a holistic approach to the design of a regulatory regime. As noted in section 4.5, the AER has previously recognised that, in principle, it would be desirable for the gas distribution regulatory framework to balance incentives for cost reduction with incentives to maintain or improve service quality.⁴¹ Given that the Victorian gas businesses lack both a Customer Service Incentives scheme and a Capital Expenditure Sharing Scheme there appears to be a clear opportunity to promote the long term interests of consumers by making changes that result in a more holistic approach to incentive regulation.

5.2 Capital Expenditure Sharing Scheme (CESS)

5.2.1 Potential problems with current arrangements

Under the current incentive arrangements, the Victorian businesses face incentives for managing capital expenditure decisions (and overall costs) that in theory may be, or are likely to be, inefficient.

Firstly, under CPI-X regulation, the businesses may have incentives to make more efficient capital expenditure decisions, but the incentives have not been explicitly designed or tested to promote efficient behaviour. The current incentives for capital efficiency are simply an outworking of factors such as the design of the CPI - X price control, the length of the regulatory period, asset lives and the businesses' allowed rate

⁴¹ In the recent draft decision for Australian Gas Networks Access Arrangement, the AER considered that the absence of an existing framework for service level (reliability) performance and a corresponding lack of time services data was a significant barrier to introducing a CESS in the 2016 to 2021 regulatory period. AER, Draft decision, *Australian Gas Networks Access Arrangement 2016 to 2021, Attachment 14 - Other Incentive schemes*, November 2015, p. 14-12.

of return. That is, although there is not an explicit capital expenditure sharing scheme, the current regulatory framework implicitly includes incentives that influence businesses' expenditure decisions.

Secondly, it is clear that businesses have uneven incentives for achieving capital efficiencies through time. The current incentives encourage businesses to maximise any available capital efficiencies early in the regulatory period, with this incentive declining so that there is little or no incentive for achieving efficiencies at the end of the regulatory period (which results in a potentially inefficient “back-ending” of capital expenditure within the regulatory period). In theory, and likely in practice, uneven incentives are not likely to promote technical efficiency in planning and implementing capital expenditure.

Thirdly, in theory there may be distortions in decision making between operating and capital expenditure decisions. As noted by the AER in its Better Regulation⁴² project for the electricity distribution industry:

Without a CESS, a NSP [network service provider] will face incentives that decline over a regulatory control period. If a NSP makes an efficiency gain in the first year of a five year regulatory control period any benefit will last for four more years before we update the RAB [regulatory asset base] for actual capex. In the final year however, the benefit will be approximately zero. This may lead to inefficient capex and inefficient substitution of opex for capex towards the end of a regulatory control period.

5.2.2 Opportunity for a CESS to address problems with current arrangements

A CESS could address each of the concerns outlined above as follows:

Firstly, a CESS could be designed to explicitly achieve a particular power of incentive for the business to achieve capital efficiencies. If the AER makes an explicit decision it is arguably more likely to choose a level of incentive power that strikes the right balance between incentives for managerial and business effort on the one hand and limiting monopoly rent and the potential risks associated with incentive mechanisms on the other hand.

Secondly, a CESS can clearly be designed to provide for continuous incentives for each year in the regulatory period - the scheme can be designed so that the incentive power is the same no matter in which year of a regulatory control period an investment is made. This is an important design feature of the EBSS that currently applies to gas and electricity businesses.

⁴² AER, Better Regulation, Capital Expenditure Incentive Guideline for Electricity Network Service Providers, November 2013, section 2.1.

Thirdly, the power of the incentive could be set so that it explicitly aligns with the EBSS incentive power thereby providing more balanced incentives for the business to choose the most efficient mix of capital and operating inputs.

The AER considered these matters in designing the CESS that currently applies to electricity businesses.

The benefits to customers of a CESS designed to meet the above objectives are:

- Stronger incentives for capex efficiency (i.e. lower regulatory asset base over time, and hence lower return on and of capital) with these benefits being passed through in lower prices over time
- In conjunction with the EBSS, incentives for the business to choose the most efficient mix of operating and capital inputs.

5.2.3 Experience with CESS schemes

Capex incentive mechanisms appear to have operated successfully for the UK water industry for a considerable time but they have proved problematic in Australia because of concerns about incentives for the deferral of capex. See Box 4.

Box 4: ESCV's Capital expenditure Efficiency Carryover Mechanism (ECM)

The ESCV approved a capital expenditure component in the Victorian gas distribution businesses' ECM for the 2003 to 2007 and 2008 to 2012 access arrangement periods.

In making its decision for 2008 to 2012, the ESCV justified continuing the capital expenditure ECM (when it had terminated the equivalent for electricity) because it considered:

- Gas distribution businesses were not inappropriately deferring capex
- It could readily adjust capital expenditure benchmarks to reflect actual capital works undertaken
- It would create an imbalance in the ECM if it removed capital expenditure from it - noting that the mechanism covered both capital and operating expenditure.

However, when the AER took over from the ESCV as the regulator, it required the capital expenditure component of the ECM be removed – and just to apply an opex component in the 2013 to 2017 access arrangement period. It justified this decision on the basis that:⁴³

The incentives to defer capex, and the lack of a balanced service standard incentive, lead to the potential for underinvestment in the pipeline and over utilisation of the pipeline. The AER considers the potential risk of underinvestment

⁴³ AER, Access Arrangement draft decision, Multinet Gas (DB No.1) Pty Ltd, Multinet Gas (DB No.2) Pty Ltd, 2013-17, Part 2, Attachments, p. 206

in the pipeline outweighs the potential benefits of the incentives to generate capex efficiencies. Therefore, the proposed capex incentive mechanism would result in outcomes that are inconsistent with the requirements in the RPP and is inconsistent with r. 98 of the NGR.

Following a change in the NER requirements in late 2012, the AER developed its CESS in November 2013 and first applied it to electricity distribution and transmission determinations made in April 2015 (for NSW and ACT distribution businesses and NSW and Tasmanian transmission networks). It has also applied its CESS to subsequent electricity determinations. The AER's CESS includes provisions that allow the AER to make adjustments to the incentive payments where a material proportion of capex is deferred. The first learnings from the CESS scheme will not be available until towards the end of the NSW and ACT electricity 2014 to 2019 regulatory control period.

5.2.4 Key features of the AER's CESS

The overarching objective of the AER's CESS is to provide businesses with an incentive to undertake efficient capex during a regulatory control period. It achieves this by rewarding businesses that spend less than their capex allowance and penalising businesses that spend more than their capex allowance. The CESS also provides a mechanism to share efficiency gains and losses between businesses and customers.⁴⁴ It therefore encourages an efficient capital expenditure profile.

The AER's CESS works in conjunction with complementary schemes:

- the STPIS which ensures that service standards are not compromised by cost reductions
- the EBSS to provide equal incentives for capital and operating expenditure efficiencies) and
- forecasting methodologies (such as the use of forecast depreciation⁴⁵).

Box 5 summarises the AER's CESS.

Box 5: The AER CESS Scheme

The calculation of efficiency gains or efficiency losses, and the method by which efficiency gains or losses are shared between businesses and customers under the AER CESS is as follows:

⁴⁴ AER, Better Regulation, Capital Expenditure Incentive Guideline for Electricity Network Service Providers, November 2013, section 2.1.

⁴⁵ Forecast depreciation is consistent with the incentives to pursue efficiency gains created by the CESS whereas actual depreciation increases the incentives.

8. The efficiency gains and losses are calculated in net present value (NPV) terms. This is done for each year of the regulatory period and then the total efficiency gain/loss is calculated for the regulatory period.
9. A sharing factor (30%, consistent with the EBSS sharing factor) is applied to the total efficiency gain/loss to calculate the business's share of the gain/loss.
10. Then the financing benefits/costs that have accrued during the regulatory period are calculated.
11. The CESS reward/penalty is calculated by subtracting the financing benefit/cost that has accrued during the regulatory period (step 3) from the business's share of the total efficiency gain/loss (step 2). This reward/penalty is added to the next regulatory period revenue requirement.

As noted above, the AER's CESS includes provisions that allow the AER to make adjustments to reduce incentive payments where capex is deferred and the:

- Amount of the deferred capex in the current regulatory period is material
- Amount of the estimated underspend in capex in the current regulatory period is material, and
- Total approved forecast capex in the next regulatory period is materially higher than it is likely to have been if a material amount of capex was not deferred in the current regulatory period.

Appendix A sets out more details on the AER's CESS.

Ideally, the CESS should include the broadest practicable range of capex categories. This will maximise the incentives provided by the scheme and promote neutral incentives for pursuing opex or capex solutions. However, if there is likely to be a material risk of inaccuracies in forecasts for the aggregate capex categories included in the CESS, then businesses might be:

- Rewarded for material forecast errors that overstate actual capex incurred in the regulatory period (windfall gain); or
- Penalised for material forecast errors (windfall loss).

This would not provide the intended incentives. The risk of windfall losses may expose the business to excessive financial risk, and the risk of windfall gains to the business from inaccurate forecasts may be perceived as inequitable for customers.

5.2.5 Consultation questions

Q3. Would introducing a CESS be desirable?

In particular:

- Is a CESS required to incentivise the business to continuously spend capital efficiently over the period?
- Is a CESS required to avoid distorting the businesses' capital and operating expenditure decisions (given currently there is an EBSS but not a CESS)?
- Is aligning the incentive power (sharing factor) of the existing EBSS with the CESS beneficial / necessary? How important is this?
- Are there any other issues of principle that should be considered?
- Should the CESS be introduced in the forthcoming or the subsequent access arrangement period?
- What specific design features should be considered?
 - Should all categories of capital expenditure be included in the CESS, or are there some categories that should initially be excluded, and if so, why?
 - Should there be an adjustment mechanism for material deferred capital expenditure?
 - Should the CESS be structured in the same way as that currently applying to electricity businesses? If not, what changes should be made in designing a CESS for gas businesses?

5.3 Customer Service Incentive Scheme (CSIS)

5.3.1 Current arrangements

Currently, the businesses are not subject a CSIS, although they are subject to GSL obligations under the System Code. The details of the GSL scheme are set out in Box 6.

Box 6: Current GSL scheme

The current GSL scheme covers four areas:

Appointments - if a business asks a customer to be present, and it fails to attend an appointment with the customer, it will pay \$50 for each time the customer is kept waiting more than 2 hours. If the business does not need a customer to be present, but it fails to attend the property, it will pay the customer \$50 for each day it does not show up.

Connections - if a business fails to connect a property within one day of the agreed date, it will pay the customer \$80 for each day it is late (up to a maximum of \$240).

Repeat interruptions - if a customer experiences five unplanned interruptions in a calendar year, and these are caused by faults in the businesses system, the business will

pay \$150. If a customer experiences ten unplanned interruptions in a calendar year, and these are caused by faults in the businesses' system, the business will pay an additional \$150.

Lengthy interruptions - if a business does not restore a customer's gas supply within 12 hours, it will pay \$150. If a business does not restore the gas supply within 18 hours, it will pay an additional \$150.

5.3.2 Features of a CSIS design

For the purposes of this Issues Paper, we have assumed that any CSIS may draw on some of the features of the current electricity distribution STPIS, including setting revenue at risk, parameters, performance targets, incentive rates and exclusions. This is discussed in Appendix B.

A CSIS for gas business may include measures relating to reliability and customer service. The equivalent reliability parameters used in electricity are of less importance to the gas distribution sector given the high reliability performance of gas business (reflecting that most of the assets are underground).

This suggests that a CSIS could either exclude reliability and focus on customer service or replace the reliability measures with other measures. For example, a key focus of gas distribution is the response to publicly reported leaks. Placing an incentive on this parameter could incentivise businesses to maintain and improve both network safety and reliability.

Potential options for measures that could be included in the CSIS include:

- Response to publicly reported gas leaks;
- Telephone responsiveness – leaks and emergency;
- Telephone responsiveness – general enquiry line;
- Surveyed levels of customer service (where a score is provided based on surveyed levels of customer satisfaction with the service level provided by gas businesses); and
- Number of complaints and/or number of referrals to the ombudsman and/or average time taken to resolve a complaint.

AGN in its AA proposal for its South Australian Gas Network⁴⁶ proposed the CSIS described in Box 7, which focusses on customer service parameters.

⁴⁶ Australian Gas Networks, Access Arrangement Information, For Australian Gas Networks' South Australian Natural Gas Distribution Network, July 2015.

Box 7: AGN high level proposal for CSIS - South Australian Gas Network Access arrangement proposal.

- Revenue at risk of $\pm 1\%$
- Customer service parameters only:
 - telephone responsiveness – leaks and emergency line;
 - telephone responsiveness – general enquiry line; and
 - number of complaints.

5.3.3 Opportunity for a CSIS to improve incentives

We assume that the current GSL scheme will continue to apply under the System Code. On this basis, the businesses theoretically might face inefficient incentives to provide services of the appropriate quality under the following circumstances:

- If there are material opportunities for the businesses to improve the efficiency of service quality for the long term interest of consumers by discovering opportunities to better align marginal cost and customer value.
 - The most appropriate option for addressing this opportunity would be introducing a CSIS scheme.
- If there are gaps in the dimensions of service quality not covered by the current GSL scheme and which are not best addressed through adding them to the GSL scheme. For example, if customers would benefit from introducing incentives for reducing telephone call time, then it would not be efficient for payments to be made to individual customers rather the incentive needs to be included in the regulated access prices.
 - The most appropriate option for addressing this opportunity would be introducing a CSIS scheme.
- If the power of the incentive to reduce costs was sufficiently strong that it may cause a decline in service quality and service quality and costs are positively related to one another.⁴⁷
 - Options for addressing this include revising the GSL scheme or introducing CSIS alongside the GSL scheme.

5.3.4 Consultation questions

Q4 Would introducing a Customer Service Incentive Scheme be desirable in principle?

⁴⁷ See discussion in section 5.3.2 above.

It is likely that the outcome of detailed customer research will be a key input into decisions on whether a CSIS would be beneficial in promoting the NGO. Noting this, stakeholder feedback is sought on the following issues of principle in considering whether or not a CSIS might be beneficial.

- Does the current regulatory framework create incentives for cost reduction to the detriment of service quality?
- Are there benefits in encouraging businesses to optimise service quality as occurs in electricity distribution through the STPIS?
- If there was a decision to introduce a CESS does the existing (or an amended) GSL provide incentives to balance service quality with cost reductions, or is a CSIS required?
- Do you agree with the types of measures to be included in a CSIS? What other measures should be included in the CSIS?

5.4 Determining the power of the incentive to promote productivity improvement

A decision is required on the appropriate power of the incentives for businesses to pursue productivity improvement. In particular, a decision is required on the appropriate power of the incentive for the EBSS scheme (which we assume the AER will continue to apply in the forthcoming access arrangement period) and also a CESS scheme if this is accepted by the AER.⁴⁸

As noted, the current EBSS allows the businesses to retain 30% of the efficiency gain (or loss) and customers receiving the remaining 70%.

The EBSS sharing ratio has remained constant since the EBSS was introduced. There has not been any change in the power of the incentive from when they were first introduced by regulators around 15 years ago.

AGN's AA/AAI proposal for its SA network proposed amending the sharing of any efficiency gain or loss in its EBSS and CESS scheme from the current rate of 30% retained by the business to 50%. This was more in line with similar incentive schemes applied by OFGEM in the UK. The AER did not accept this proposal as it did not consider any change was required to incentivise efficient behaviour by AGN.

The remainder of this section examines evidence and issues relevant to considering whether the incentive power for EBSS and CESS should be changed.

⁴⁸ The power of incentive for the EBSS and CESS should be set consistent with one another to promote balanced incentives for the business to efficient mix of operating and capital inputs (see section 4.4).

5.4.1 Evidence and issues informing decisions on incentive power

Trends in productivity

Analysis undertaken by Economic Insights for AGN indicates that the Australian gas distribution businesses achieved relatively high productivity growth following the introduction of incentive regulation in the late 1990s and early 2000s but the rate of productivity growth has moderated in recent years. AGN suggests that future efficiency gains are expected to be limited to the rate of technological change in the gas distribution sector.⁴⁹ See Box 8.

Box 8: As firms become efficient then productivity growth rates will converge to the long run rate of technological change

Normally, firms that are at the forefront of industry performance have high productivity levels but low productivity growth rates. This is because they have removed almost all unnecessary slack from their operations and are only able to increase productivity at the rate of technological change for the industry. Conversely, firms that are not operating at high levels of efficiency should be able to achieve higher productivity growth rates as they catch up. As all firms become efficient (e.g. in response to incentive regulation) then productivity growth rates will converge to the long run rate of technological change in the industry.

This process of 'convergence' to the long rate [long-run rate] of technological change in the industry also has important implications for the interpretation of measures of historical TFP [Total Factor Productivity] growth at the industry level for regulatory purposes. In most infrastructure industries we normally see a period of high productivity growth when the reform process is started and easy 'catch-up' gains are made. As performance moves closer to best practice, industry productivity growth usually slows down as marginal improvements become harder to achieve.

The rate of technological change in distribution businesses is likely to be relatively slow given the mature and stable nature of the technology used.

Source: Economic Insights 2012, *The Total Factor Productivity Performance of Victoria's Gas Distribution Industry*, March 2012, pg. 7.

This evidence suggests that economic regulation may have largely exhausted the potential for removing unnecessary slack from gas distribution operations and, if this is the case, that in order for consumers to receive further benefits over time, that the focus of economic regulation should shift to raising the rate of industry productivity.

One means of doing this would be to consider raising the power of incentives for gas businesses. This is discussed below. An alternative or complimentary means of doing

⁴⁹ Australian Gas Networks, Access Arrangement Information For Australian Gas Networks South Australian Natural Gas Distribution Network, July 2015 p. 196.

this would be to introduce specific network innovation schemes. This is discussed in the next section.

Strategic focus on raising industry productivity in the UK

As noted above, OFGEM has put significant emphasis on raising energy industry productivity and improving innovation, resulting in the RIIO reforms.

AGN's analysis indicates that the power of incentive mechanisms applying to electricity and gas businesses in the UK is considerably higher than for Australia, with incentive rates for gas businesses in the UK being as high as 65% (i.e. 65% of an efficiency gain or loss is retained by the business).⁵⁰

AGN estimates that a gas business in the UK could potentially increase (or decrease) its return on equity by over 3% if it outperforms (or underperforms) against certain performance targets, whereas the maximum incentive available to similar businesses in Australia is less than 1%.

What are the risks associated with moving to higher power of incentive? Are they manageable?

As discussed in section 4.7.2, a number of theoretical risks have been identified in the economic regulation literature with higher-powered incentive regimes. (See Box 9):

Box 9: Theoretical risks identified with higher-powered incentive regimes

Higher-powered cost incentives raise the following risks. The regulator:

- May test the ability of the regulator to commit to the regulatory regime, if the regulated firm is able to reduce its costs and earn substantial apparent excess returns (and vice versa if costs are high and the regulated firm earns low returns)
- May lead to a regulatory regime that is unsustainable because of the greater risk on the regulated firm
- May distort the efforts of the firm to concentrate on cost reduction objectives at the expense of other desirable objectives
- May give rise to greater incentives on the regulated firm to behave strategically at regulatory reviews to induce the regulator to loosen the performance targets
- May increase the risk that the regulator will be 'captured' by the regulated firm.

Assessment

⁵⁰ Australian Gas Networks, *Access Arrangement Information For Australian Gas Networks*, South Australian Natural Gas Distribution Network, July 2015 p. 196.

The Australian energy network regulation regime is relatively robust and mature compared to when it commenced in the late 1990's.

Arguably there is not a strong case that the power of incentives included in the current EBSS has given rise to any of the theoretical risks identified above. However, this may need to be revisited once out workings from the AER's CESS in the electricity industry become available (expected in 2019 and 2020).

If there are no theoretical risks with the current power of incentives, and there is a strategic view that improving industry wide productivity performance is an important priority to promote the long term interests of consumers, then there may be a strong case for increasing the power of the incentives.

5.4.2 Consultation questions

Q5 Should the AER approve higher-powered incentives?

- Has the rate of productivity growth for the Victorian gas distribution business converged on the long run rate of technological change? Is the evidence for this convincing?
- Do the Victorian gas distribution businesses need greater incentives to achieve further efficiencies and higher productivity growth (consistent with the NGO)?
- Are there material risks arising from increasing the power of incentives? Are these risks manageable?

5.5 A Network Innovation Scheme (NIS)

Currently there is no specific NIS for gas distribution businesses within the regulatory framework, nor any specific guidance to the AER in the Rules on the factors it should consider with respect to promoting innovation. As noted, the AER has a broad discretion about how to consider proposals for network innovation schemes and must consider them in terms of whether they would promote the NGO (promote efficiency for the long-term interest of customers with respect to price, reliability, safety and quality).

The UK regulator Ofgem has introduced three innovation measures as part of its RIIO (Revenue = Incentives + Innovation + Outputs) model. These are outlined in Appendix C.

The AER in 2008 approved a Demand Management Innovation Allowance (DMIA) to apply to the 2009 ACT and NSW electricity distribution determinations.⁵¹ This scheme is narrowly targeted on promoting demand management whereas the UK scheme is targeted on promoting any type of value enhancing innovation. The amounts allowed to be recovered under the DMIA ranged between \$100,000 for ActewAGL to \$1 million for Ausgrid to

The AER rejected AGN SA's proposed NIS on the basis that the current regulatory framework has sufficient incentives and opportunity to invest in innovative enhancements and that consumers shouldn't pay now for potential future savings.⁵²

5.5.1 Assessment approach

In the absence of detailed guidance in the NGR it is suggested that were such a scheme to be developed and proposed, the AER should adopt a standard best practice regulation approach and consider the following key questions:

- Is there a problem with the current arrangements?
- If there is a problem what are the solution options for addressing it?
- What is the preferred solution?
- Does a solution within the regulatory framework fit seamlessly with other relevant government policies?

The following questions for stakeholder feedback take this framework into account.

5.5.2 Consultation questions

Q6 Is a new regulatory incentive required for the Victorian gas businesses to pursue innovation, or are the current arrangements sufficient?

- Is there a problem - under the status quo incentives, is it likely that the businesses may be slow to deliver innovation that would promote the NGO?
- Would introducing a CESS sufficiently promote innovation or is a Network Innovation Scheme (NIS) required in addition?

⁵¹ This allowance was approved pursuant to Clause 6.6.3(a) of the transitional Chapter 6 rules which stated that the AER may develop and publish an incentive scheme or schemes (demand management incentive scheme) to provide incentives for DNSPs to implement efficient non-network alternatives or to manage the expected demand for standard control services in some other way.

⁵² AER, Draft decision, Australian Gas Networks Access Arrangement 2016 to 2021, Attachment 14 - Other Incentive schemes, November 2015, p. 14-18.



- Is promoting innovation best addressed through a regulatory incentive introduced under Rule 98, through other government policies or agencies and/or through rules development by the AEMC?

6. Summary of incentive arrangement framework and options

The following table:

- Sets out the theoretically desirable attributes of an incentive framework based on the economic regulation literature and experience discussed in section 4)
- Identifies which specific incentive mechanism or design features contribute to promoting each attribute and
- Identifies some of the key linkages between the different incentive mechanisms.

Table 1: Summary of incentive mechanism options and linkages

Theoretically desirable attribute	EBSS	CESS	CSIS	NIS
Even incentives for achieving efficiency gains through time	Retain EBSS	Introduce CESS		
Balanced incentives to promote an efficient mix of inputs	Retain EBSS structure	Introduce CESS		
	Set efficiency sharing ratios for EBSS and CESS so they are consistent			
Balanced incentives for cost reduction and service quality			Introduce CSIS if GSL is not adequate	
Incentives to the business to optimise service quality			Introduce CSIS	
Appropriate incentives for improving efficiency for all costs	Consider whether to increase incentive power	Introduce CESS and consider appropriate incentive power		
	Set incentive rates for EBSS and CESS consistently			
Appropriate incentives for innovation	As above	As above		Consider introducing NIS if incentives for innovation provided by EBSS and CESS are considered inadequate.

Note that this theoretical analysis does not represent a recommendation that any of the potential new incentive mechanism be introduced. These decisions should be informed through stakeholder feedback and the application of good regulatory practice.



6.1 Consultation questions

Q7. Is the summary of incentive mechanism options and linkages in Table 1 reasonable? Are there any changes suggested?

Appendix A - Capital Expenditure Efficiency Scheme design issues

This Appendix includes an overview of the AER's CESS with a worked example, and elaborates on the AER's mechanism for making adjustments for deferred capital expenditure.

The AER's CESS works as follows:

12. The cumulative underspend or overspend is calculated for the current regulatory period (period n) in net present value (NPV) terms. Assuming a regulatory period of five years, the actual underspend or overspend is calculated in the first four years of the regulatory period and an estimate of the underspend or overspend in the final year of the regulatory period.
13. A sharing ratio of 30 per cent is applied to the cumulative underspend or overspend to work out what the business's share of the underspend or overspend should be. The 30 per cent sharing ratio is consistent with the mathematical outworking of the AER's EBSS based on a five-year carryover period.
14. To work out the CESS payments, the financing benefit or cost to the business is calculated using forecast depreciation to roll forward the regulatory asset base. This financing benefit or cost is subtracted from the business's share of underspend or overspend. The financing benefit or cost received by the business declines over the regulatory period. This means an underspend in year one of the regulatory period will deliver a higher financing benefit to the business than an underspend in year five of the regulatory period.
15. The CESS payments that relate to underspending or overspending in the current regulatory period will be added or subtracted to the business's regulated revenue as a separate building block in the next regulatory period (period n+1).
16. The CESS payments are adjusted for any identified deferred capex (see below for more details).
17. Further adjustments to the CESS payments may need to be made where actual underspending or overspending in the final year of the regulatory period differs from the estimate provided at the time of the initial calculation (in step 1 above). These adjustments will be made when undertaking a revenue determination for the subsequent regulatory period (period n+2).

Table 2 below shows a worked example of how the CESS operates, prior to any adjustments for deferred capex or the final year actual,

Table 2 - Example of how the CESS operates - \$m

Regulatory year (t)	1	2	3	4	5	Total
AER capex allowance (CA _t)	200	200	200	200	200	
Actual (A _t) / estimated (A _s)	180	190	200	210	180	

Regulatory year (t)	1	2	3	4	5	Total
Underspent / overspent ($I_t = CA_t - A_t$)	20	10	0	(10)	20	
Year 1 financing benefit	0.59	1.20	1.20	1.20	1.20	
Year 2 financing benefit		0.30	0.60	0.60	0.60	
Year 3 financing benefit			0	0	0	
Year 4 financing benefit				(0.30)	(0.60)	
Year 5 financing benefit					0.60	
Total financing benefit (FB)	0.59	1.50	1.80	1.50	1.79	
Discount factor* (mid-year) (E)	1.30	1.23	1.16	1.09	1.03	
Discount factor* (end of year) (F)	1.26	1.19	1.12	1.06	1.00	
NPV underspent ($I_t * E$)	26.00	12.26	0	(10.91)	20.59	47.94
NPV financing benefit received (FB*F)	0.75	1.78	2.02	1.59	1.79	7.94

* 6% real discount rate applied

In calculating the rewards/penalties it is assumed that the financing benefit is achieved half way through the year and in determining the NPV of the rewards/penalties:

- capex occurs mid-year, therefore, a mid-year discount rate is required for capex underspend
- an end of year discount rate is applied to the financing benefit.

From the above:

1. The total underspend (NPV) over the regulatory period is \$47.94m
2. The customers' share is set to 70%, which is \$33.56m
3. The business's share is set to 30%, which is \$14.38m; the business has already received \$7.94m in financing benefits over the regulatory period and therefore will be provided with an additional \$6.44m in the next regulatory period.

Deferred capital expenditure

Given AER and stakeholder concerns in benefits that businesses, and expenses that consumers, may receive from deferring major capex from the current regulatory period into a future regulation period, the AER has developed a deferred capex adjustment mechanism. The effect of the mechanism is to help consumers share in the benefits from deferred capex. It also helps to deter businesses from deferring capex between regulatory periods where such deferral is inefficient.

An adjustment to the CESS payments is made where a business has deferred capex in the current regulatory period and the:

18. amount of the deferred capex in the current regulatory period is material, and
19. amount of the estimated underspend in capex in the current regulatory period is material, and

20. total approved forecast capex in the next regulatory period is materially higher than it is likely to have been if a material amount of capex was not deferred in the current regulatory period.

Where the AER determines such an adjustment will be made, it reduces the CESS payments a business would have otherwise received in the next regulatory period for capex underspends in the current regulatory period. The adjustment is the present value of the estimated marginal increase in forecast capex in the next regulatory period attributable to capex deferred in the current regulatory period. The AER subtracts this estimate from the total efficiency gain calculated for the current regulatory period.

Appendix B - Customer Service Incentive Scheme Design issues

This Appendix overviews the customer service component of the AER's STPIS for electricity distribution businesses. This provides some insights for how the CSIS could be applied to the Victorian gas distribution businesses. However it is emphasised that design of a CSIS for gas distribution will need to be based on a careful understanding of the specific service features of gas distribution that are important to customers

The "customer service" component is one of four components of the electricity STPIS – the other three components being the "reliability of supply" component, the "quality of supply" component and the "guaranteed service level" (GSL) component.

The business's revenue is increased (or decreased) based on changes in its service performance for each component, other than for the GSL component for which payments are made directly to affected customers.

The "customer service" component of the STPIS comprises the following elements:

- 1) Customer service parameters – the following four components can apply:
 - a) Telephone answering
 - b) Streetlight repair
 - c) New connections
 - d) Response to written enquiries.
- 2) Revenue at risk – unless the business proposes a higher amount the maximum revenue at risk for:
 - a) All customer service parameters for each regulatory year is 1%, being a +1% upper limit and a -1% lower limit
 - b) An individual customer service parameter for each regulatory year is 0.5%, being a +0.5% upper limit and a -0.5% lower limit.
- 3) Performance targets – the performance targets must be based on average performance over the past five regulatory years, subject to a range of specific adjustments (including specific customer service exclusions and completed or planned improvements). The AER may use an alternative methodology or benchmark where five regulatory years of data is not available
- 4) Incentive rates – the value of incentive rates for each parameter shall be based on an assessment of the value that customers attribute to the proposed level of service,
- 5) Exclusions – a business may:

- a) Make a proposal to exclude events from the calculation of a revenue increment or decrement for any customer service parameter
- b) Exclude events that can be excluded from the “reliability of supply” component of the STPIS from the telephone answering parameter of the “customer service” component of the STPIS.

These elements are applied together to calculate the “customer service” component of the STPIS. This component, and the “reliability of supply” and “quality of supply” components, are reflected into an “S factor” that is included in the business’s control mechanism, which determines the annual increments or decrements to the business’s allowed revenue.

Appendix C - Ofgem's network innovation measures for gas distribution businesses

This Appendix overviews Ofgem's network innovation allowance for gas distribution businesses in the UK. This is one potential approach for how a NIS could be developed for the Victorian gas distribution businesses.

Ofgem has introduced innovation measures as part of its RIIO (Revenue = Incentives + Innovation + Outputs) model. The innovation measures for gas distribution businesses comprise three elements:

21. A Network Innovation allowance (NIA) to fund small-scale innovation projects
22. A Network Innovation Competition (NIC), which is an annual competition to fund selected flagship innovative projects that would deliver low carbon and environmental benefits. Funding is provided for the best innovation projects focused on delivering cost reductions, environmental benefits, and security of supply. This is intended to fund larger scale, more complex projects than would be funded through the NIA
23. An innovation roll-out mechanism (IRM) to fund the rollout of proven innovations that contribute to delivering low carbon and environmental benefits.

The NIA is part of the business's price control. It is intended to fund small research, development, and demonstration projects which meet specified criteria or submissions to the NIC. The NIA projects must involve one of the following:

24. A specific piece of new equipment
25. A specific novel arrangement or application of existing equipment
26. A specific novel operational practice directly related to gas operations
27. A specific novel commercial arrangement.

The NIA projects must also:

28. Have the potential to develop learning that can be applied to all gas businesses
29. Have the potential to deliver net financial benefits to network customers
30. Not lead to unnecessary duplication.

Ofgem expects gas distribution businesses to collaborate with each other, and other parties in the energy sector, to undertake projects funded through the NIA. They require the businesses to establish a Collaboration Portal for this purpose. Ofgem also expects businesses to share the learnings gained through the projects funded through the NIA. They require the businesses to establish a Learning Portal for this purpose.

Ofgem also requires businesses to:

31. Undertake a project eligibility assessment against the above criteria



32. Register their projects for funding
33. Report details of their expenditure
34. Prepare an annual summary of its NIA activity.