Capital expenditure sharing scheme for gas distribution network service providers

Information paper

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Introduction

Purpose

This paper sets out our considerations in implementing a capital expenditure (capex) sharing scheme (CESS) for gas distribution network service providers (DNSPs). We consider the issues set out in this paper are relevant to ensuring that any potential changes to capex incentive schemes are robust and in the long term interest of customers.

This attachment draws upon our response to Australian Gas Networks' (AGN) proposed CESS for South Australian gas distribution and the issues raised by Farrier Swier Consulting's incentive mechanism consultation on behalf of the Victorian Gas DNSPs.

At this stage we have not formed a view on whether to implement a CESS for gas distribution. As part of our assessment of the 2018–22 Victorian gas access arrangement review we will decide whether or not changes should be implemented to existing capex incentives.

Background

On 26 May 2016, we did not accept AGN's proposal to implement a CESS in the 2016–21 access arrangement period for South Australia gas distribution. We considered the implementation of the CESS for gas distribution required further consideration and consultation to ensure the suitability of the scheme for gas.[1]

On 10 June 2016, the Victorian gas distribution businesses (Multinet, AusNet Services and AGN) released an issues paper on incentive arrangements. Farrier Swier Consulting (FSC) prepared the issues paper for public consultation. It explored potential changes to incentive mechanism arrangements the gas DNSPs could propose to the AER ahead of the Victorian gas review scheduled to commence on 31 December 2016.

On 11 July 2016, the businesses convened a stakeholder forum to discuss the issues paper. AER staff attended and presented at the forum.

FSC, as the facilitator of the forum, discussed the desirable attributes of an incentive framework, noted that the current incentive framework is arguably not very holistic, and highlighted the stronger incentives employed in the UK. They also discussed the merits of introducing an innovation scheme, in the context of declining annual productivity improvements observed from the gas distributors' in recent years.

AER staff highlighted the following points in our presentation, and in general discussed:

- the competitive pressure faced by gas distributors (that is, gas as a 'fuel of choice')
- the need for a countervailing service quality incentive scheme should a CESS be implemented

[1] AER, *Final decision Australian Gas Networks access arrangement 2016 to 2021 Attachment 14 – other incentive schemes*, May 2016, p. 14–6.

- the likely application of any change to incentive arrangements to apply across all gas distribution businesses on a long-term basis to avoid potential for gaming by switching in and out of incentive arrangements.

On 23 September 2016, FSC released its findings report which sets out the process and outcome of stakeholder consultation undertaken by the Victorian Gas Distribution Businesses.

Relevant Law and Rules

A full access arrangement may include (or we may require it to include) one or more incentive mechanisms to encourage efficiency in the provision of services by the service provider.[2] Incentive mechanisms may provide for carrying over increments for efficiency gains, or decrements for efficiency losses, from one access arrangement period into the next.[3] An incentive mechanism must be consistent with the revenue and pricing principles (RPP).[4]

The NGR provides us with full discretion with respect to the inclusion of an incentive mechanism in an access arrangement.[5].

The RPP include that a service provider should be provided with effective incentives in order to promote economic efficiency with respect to reference services the service provider provides.[6]
The economic efficiency that should be promoted includes:

- efficient investment in, or in connection with, a pipeline with which the service provider provides reference services; and
- the efficient provision of pipeline services; and
- the efficient use of the pipeline.[7]

The RPP also require that regard should be had to the economic costs and risks of the potential for under and over investment by a service provider in, or for under or over utilisation of, the network.[8]

In considering these principles, the National Gas Objective (NGO) guides us, to promote efficient investment in, and efficient operation and use of, natural gas services *for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply* of natural gas.[9]

2 NGR, r. 98(1).
3 NGR, r. 98(2).
4 NGR, r. 98(3).
5 NGR, r. 40(3).
6 NGL, s. 24(3).
7 NGL, s. 24(3).
8 NGL, s. 24(6), (7).
9 NGL, s. 23.

AER considerations in adopting a CESS

The objective of a CESS is to provide a network service provider (NSP) with an incentive to undertake efficient capex during an access arrangement period.

The CESS is continuous, in that the incentive is the same for each year of the access arrangement period. It also aims to provide stronger incentives than would otherwise exist for businesses to reduce their costs below approved forecasts.

However, without a complementary incentive to maintain the quality, safety, reliability and security of supply of natural gas, a CESS may create financial incentives for NSPs to reduce capex in a way that could reduce the safe and reliable operation of the network.

Below we examine the current incentive framework.

Current incentives faced by DNSPs to deliver efficient capex?

In this section, we discuss:

- how the gas DNSPs are currently incentivised to deliver efficient capex, including other influences that might encourage cost efficiency;
- potential issues with the current incentive framework as expressed by some of the businesses and outlined in the Better Regulation Guidelines for electricity;
- review of the gas businesses' performance when a CESS was applied.

How are gas distribution businesses currently incentivised to deliver efficient capex?

As with electricity DNSPs, gas DNSPs are incentivised to undertake efficient capex through an ex-ante incentive based regulatory framework which provides distribution businesses with the incentive to spend less than the revenue allowance we approve. This revenue allowance is based on a forecast of the capex that the company should need in the forthcoming AA period. Once a DNSP's capex forecast is determined, the DNSP is provided with sufficient revenue to cover a return on and of capital to fund that capex (that is the sum of the forecast RAB multiplied by the WACC[10] and depreciation).

As the capex is set before the AA period commences, a gas DNSP then has an incentive to spend less than what it was forecast to spend and in so doing earn higher returns. The gas DNSP earns the revenue allowance we set for the entire AA period whether actual capex is less or greater than forecast capex. If actual capex is less than forecast capex, the DNSP can earn higher actual returns. If actual capex is greater than forecast capex, the DSNP has to fund the difference through lower returns. It is widely recognised that this not only provides an incentive for DNSPs to spend less than what was forecast, but also to inflate its forecast. This underscores the importance of ensuring that the approved capex forecast is robust.

[10] The forecast RAB is the actual RAB at the end of the previous AA period, plus any forecast capex undertaken in the current AA period, minus any actual depreciation (from assets in place prior to the start of the AA period), minus any forecast depreciation (from capex undertaken during the AA period).

Both the NGR and NER provide a mechanism to adjust the RAB at the end of a regulatory period to reflect actual capex (and forecast depreciation) in to ensure that only efficient capex is included in the RAB. Under the NER, the AER reviews actual capex to ensure that any amounts by which the electricity DNSP's actual capex was greater than forecast ("over spend") are efficient and adjusted into the RAB. Under the NGR, the AER is adjusts the RAB to ensure that only efficient actual capex is included in the RAB, regardless of whether actual capex was greater or less than forecast.

Rule 77 provides that the opening capital base should include among other things, conforming capex made or to be made, during the earlier access arrangement period. This allows the AER to exclude any capex made in the previous period (not just any over-spends) that is not conforming capex (i.e. capex that is not prudent, efficient and justifiable) from the opening capital base. In this way this is a full ex-post review rather than the more limited version applying under the NER for electricity. An ex-post review of inefficient capex can also incentivise businesses to deliver efficient capex. Significantly, a full ex-post review reduces the need for a CESS to promote efficient investment.

Other influences the gas businesses face when making decisions about capex

Along with the inherent incentives within the regime, there are a number of other influences specific to gas distribution that can affect their expenditure decisions. Unlike electricity NSPs, in general, the gas DNSPs are facing increasing competitive pressures from electricity, with gas becoming a fuel of choice, particularly in warmer regions. This creates further incentives to remain cost efficient and competitive in price and the quality of service.

As commercial businesses gas DNSP are expected to be responsive to financial incentives.

<u>Increased competition with electricity</u>

Gas businesses, such as AGN and JGN, have described gas as 'a fuel of choice' and that it must compete with electricity.[11] Most recently AGN noted:

> Natural gas is a fuel of choice, reflecting that there are readily available and low cost substitutes for all residential and most business uses of natural gas…the competitive pressures faced by our business are expected to increase as a result, for example, increasing penetration of renewable electricity and storage options.[12]

We also raised the question of whether gas is a 'fuel of choice' during the stakeholder workshop.

The CUAC, in its response to the issues paper, considered low-income customers and renters were unlikely to switch fuel and appliances in the absence of significant changes in government policy or incentives. However, higher income customers are more likely to consider switching if it becomes financially viable to do so. Due to the high gas penetration rate in Victoria, price changes will have a direct impact on a majority of Victorians, but have limited capacity to respond, other than through reduced usage.[13]

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[11] AGN, SA Access Arrangement Information, July 2015, p. 202. HoustonKemp Economists, *Implications for Jemena Gas Network (NSW) of Increasing Competition in the Consumer Energy Market*, 27 February 2015.

[12] AGN, *Draft Plan, Five year plan for our Victorian and Albury natural gas distribution networks*, July 2016, p.37.

[13] Consumer Utilities Advocacy Centre, Response to incentive mechanisms positions paper, 3 August 2016, p. 2.

In Victoria, of the three main uses of gas - heating, cooking and hot water – gas heating is the largest contributor to total consumption. Our analysis indicates that gas penetration in Victoria remains high (92.4 per cent in 2008, 91.2 per cent in 2014). Gas penetration rates – the rate at which households are connecting to gas within the reach of a gas network – is a good measure of whether households are moving towards using other energy sources to the extent that it does not connect to gas. The proportion of Victorian households using gas, as the primary heating source, has declined from 71.2 per cent in 2005 to 64.3 per cent in 2014. Meanwhile electricity, as the primary heating source has increase from 14.7 per cent to 20.9 per cent during the same period. [14]

AEMO notes that there are barriers to switching from gas to electricity which include high upfront cost of efficient electric appliances relative to annual energy cost savings.[15] Cheaper retail gas prices in Victoria also continue to make gas heating the preferred method of heating.

We are also observing some falls in gas penetration rates for new dwellings in the warmer states, like NSW and SA.

In NSW, JGN (NSW) forecast an 80 per cent penetration rate for 2015-20, which is lower than historical levels of about 90 per cent due to higher gas prices and use of substitute energy sources. Penetration is still high due to gas hot water installation.[16] In SA, the penetration rate for new dwellings fell from 98 per cent in 2011 to 73 per cent in 2014. AGN forecasts the penetration rate for new dwellings for 2016-21 at 65 per cent. [17]

For colder areas, such as Canberra, ActewAGL applied an 83.5 per cent penetration rate for all new dwellings for the 2016-21, based on historical data.

In summary, we observe that gas usage and penetration rates in Victoria are still distinctly higher compared to the warmer states such that there is likely to be less of a competitive constraint from other energy sources. Our decision on whether to introduce a CESS include consideration of whether such a measure should be applied industry wide or alternatively applied only in certain states where less competitive conditions exist.

Incentives for privately owned gas businesses

Gas businesses in Australia are privately-owned. In theory, we expect the gas DNSPs to be responsive to financial incentives, and in an increasingly competitive energy market, are more likely to make expenditure decisions that are cost efficient.

For the 2013–17 period all of the Victorian gas DNSPs underspent relative to their allowance where a CESS was not in place.

Table 1 summaries the comparison between total actual and allowed capex spend for all three Victorian gas DNSPs for three AA periods.

[14] *ABS 4602.0.55.001 Environmental Issues: Energy Use and Conservation, March 2011 and 2015*

[15] AEMO, Emerging technologies information paper, June 2015, p. 70.

[16] Core Energy, Gas demand and customer forecasts Jemena Gas Networks, April 2014,p. 57.

[17] Core Energy, Gas demand forecasts Australian Gas Networks, June 2015, p. 30.

Table 1: Percentage of actual capex relative to total capex allowance, 2003-07, 2008-12 and 2013-15

Gas DNSP	Difference between total capex allowance and actual capex		
	2004-07	2008-12	2013-15[a]
Multinet	-30.45%	-5.77%	-18.09%
AGN	4.25%	-25.02%	-8.01%
AusNet	9.89%	3.42%	-17.36%

a. Most recent data available

The CESS ceased to apply in the 2013-17 AA period, when the AER assumed responsibility of regulating these businesses from the Essential Services Commission of Victoria (ESCV). During the 2003-08 and 2008-12 AA periods where a CESS was in place, there was a mix of underspending and overspending, where overspends were not significant. We discuss the circumstances around removing the gas CESS later in this paper.

Table 1 suggests that over the 2013-17 period – when a CESS was not in place – all the businesses continued to respond to incentives inherent in the regime, in that the businesses were able to beat the capex forecast.

This indicates that the rule changes to implement a CESS for electricity was in response to significant overspending by some electricity DNSPs.

The ENA considered it would be appropriate for the AER to adopt common approaches for gas and electricity.

However, as seen in the data above, there are differences between the gas and electricity DNSP's expenditure profiles. Some electricity DNSPs did not necessarily respond to incentives that were in place at time. Meanwhile gas DNSPs did not have the same overspending issue.

Although, we consider it is preferable to have a consistent regulatory framework, the introduction of a CESS in electricity distribution was a direct result of addressing an observed capex overspend issue prevalent in that industry.

This is not the case for gas distribution. In considering whether we should introduce a CESS, we must examine what the current issues are in gas distribution.

Potential issues with the current incentive framework

There are a number of arguments in the FSC Issues Paper, FSC Finding Report and our Better Regulation Guidelines in support of a CESS, including the following:

- There are declining incentives for efficient capex over the AA period that a gas CESS would address by smoothing out the capex profile of the AA period.
- A gas CESS would better align the incentives for efficient capex and opex to remove any bias in whether to undertake capex or opex, which is especially relevant in the later years of the AA period.

- The gas businesses are highly efficient and therefore require further incentive to achieve efficiency gains, and a gas CESS would be an appropriate mechanism to achieve this. Future efficiency gains will be limited to the rate of technological change, and that for additional efficiency gains beyond this rate, a CESS would provide that extra incentive to identify and implement these additional (more costly) improvements.

Declining incentives for efficient capex over the AA period

We have previously identified declining incentives for efficient capex over the AA as a concern in the Better Regulation Guideline for the electricity NSPs. The Better Regulation Guideline identified three mains reasons as to why declining incentives for efficient capex may be a problem:[18]

- There is a lack of discipline on capex in the latter years of an AA period – if a gas DNSP's actual WACC is consistently lower than the regulated WACC, the gas DNSP could benefit from overinvesting in the latter years of the regulatory period;

- It could distort decisions about whether to undertake capex or opex, particularly toward the end of the period.
- Capex might be less efficient if DNSPs skew their capex towards the end of the AA period, where unnecessary peaks and troughs in an investment program can result in higher costs than a more stable work program.

In response to the FSC Issues Paper, the CUAC encouraged the AER to review the empirical evidence of distributor's spending during the 2003–07 and 2008–12 period when a capex incentive scheme was in place.[19]

We have examined the capex profile of the Victorian DNSPs over time to see if there is an increasing capex profile over an AA period. Figure 2 in Appendix A shows that, the most pronounced trend of increasing capex spend was over the 2008-12 AA period – the period in which a CESS was in place. Further, for the 2013-17 AA period where a CESS ceased to apply, the results are mixed. However, there were particular circumstances during 2008-12 and 2013-17 AA periods (discussed in Appendix A) which may make interpretation of the capex profile difficult.

More generally, we question whether an increasing capex profile is problematic such that it requires implementation of a CESS. In this regard, it is important to consider whether the benefits in smoothing the capex profile outweigh the cost of implementing a CESS which could involve significant changes such as increases in data collection and service quality monitoring.

Better alignment of the incentives for efficient capex and opex

The declining incentive for efficient capex over the AA period could distort decisions about whether to undertake capex or opex – for instance, in year five of an AA period the incentives for efficient opex are currently higher than the incentives for efficient capex. This is because the EBSS provides a constant 30 per cent sharing ratio for efficiency gains. Meanwhile, the incentive for efficient capex declines throughout the regulatory

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18 AER, *Better Regulation – Expenditure incentives guidelines for electricity network service providers*, November 2013, pp. 26-27.

19 Consumer Utilities Advocacy Centre, Response to Incentive Mechanisms position paper, 3 August 2016, p. 3.

period and is less than 30 per cent from the second to the fifth year of the access arrangement period. Thus, the DNSP could benefit from spending on capex instead of opex even if it leads to overspending on capex.

At this stage there is no empirical evidence to support the argument that without a CESS in place, the difference in incentives distorts the decision on whether to undertake capex or opex and the materiality of any such distortion. As discussed above, we need to weigh the benefits of a CESS, such as potentially aligning capex and opex incentives, against the cost of implementing the CESS which could involve significant changes.

<u>Current incentives insufficient to drive greater efficiencies</u>

Analysis undertaken by Economic Insights for AGN indicates that the gas DNSPs achieved relatively high productivity growth following the introduction of incentive regulation in the later 1990s and early 2000s but the rate of productivity growth has moderated in recent years. AGN expects that future efficiency gains to be limited to the rate of technological change in the gas distribution sector.[20] AGN argues that economic regulation may have largely exhausted the potential for removing unnecessary slack from the gas distribution operations.

Rule 98 of the NGR provides the AER with the authority to include incentive mechanisms that encourage efficiency in the provision of services. Such efficiencies may lead to increases in industry productivity. However, current measures of productivity growth may not be appropriately capturing underlying efficiency gains. This is because other factors such as changes in regulatory obligations will impact on the productivity measure. Therefore a focus on industry productivity alone would unnecessarily narrow the objective of incentive mechanisms.

That aside, we note also that the current regulatory framework offers opportunity to invest in innovative enhancements. In the past the gas businesses have proposed, and we have accepted in some cases, a number of capex projects that promote innovation. For example, we accepted AGN's proposed of $10 million for a HDPE camera in our review this year. We accepted the proposed capex amount even though it was at a trial phase but we considered the capex prudent given the trail camera's ability to detect cracks in the HDPE pipes. To the extent that the businesses underspend relative to their allowance, the efficiency gain achieved can be spent by the business on innovative schemes. Future efficiency gains are then partly captured by the businesses either through the EBSS or capex incentives inherent in the regime.

Summary – existing incentives of the Victorian DNSPs

In assessing whether existing incentives are sufficient to deliver efficient capex, we review some of the differences between the electricity and gas sector, as well as the gas DNSPs' profile over time. Overall, we conclude that the Victorian gas DNSP's are performing quite differently, such that some of the reasons for imposing a CESS in electricity may not apply to the Victorian DNSPs.

Victorian gas DNSPs on average underspent against capex forecasts, so it is not clear that stronger incentives to reduce and smooth capex are required. This compares to the electricity NSPs where overspends were observed prior to applying a CESS.

[20] AGN, *Access Arrangement Information for AGN, South Australian Natural Gas Distribution Network*, July 2015, p. 196.

Further we have not observed the 'see-saw' pattern of investment evident in electricity. However, overall, it is difficult to make any particular conclusions from our examination of the Victorian DNSPs capex profile over the last three AA periods, as there were particular circumstances during the AA period which may have affected this trend.

We also note that unlike electricity, gas demand is falling across the states – more so in the warmer states where gas is facing increasing competition from other energy sources. With a declining demand, businesses would be incentivised to make efficient investment decisions. While evidence to date suggests that Victoria still has distinctly high gas consumption and penetration rates, these are forecast to fall gradually overtime.

If further incentives are required such as a CESS, what features would be included?

A CESS could be beneficial as it creates stronger incentives on business to seek efficiencies. However, we need to consider the risks associated with a CESS when contemplating its application. In this section we discuss:

- an innovation scheme - funding for capex projects which promote innovation;
- issues around the power of the incentive; and
- some key safeguards necessary to limit the risk of underspending on capex and reductions in service quality/safety.

Innovation scheme - innovation allowance to fund capex which promotes innovation

AGN proposed a further incentive scheme, the Network Innovation Scheme (NIS) for its SA access arrangement. AGN considered that the scope for regulated businesses to invest in innovation is limited by economic regulation because regulated benchmarks do not include an allowance for innovation and prices are reset shortly after the innovation meaning the benefits of innovation are passed onto customers after a short time. The AER rejected AGN's proposed scheme noting that the current regulatory framework has sufficient incentives and opportunity to invest in innovative efficiency enhancements under its current regulatory framework.[21]

FSC's Issues Paper also canvasses this type of scheme as an additional incentive that may be required to encourage greater efficiencies for the gas businesses. The Issues Paper overviews the Ofgem Network Innovation Scheme (NIS) (similar to that proposed by AGN in its SA review proposal) as one potential approach for how an NIS could be developed for the Victorian gas distribution businesses and is detailed in Box 1 below. As can be seen in Box 1, an NIS is a targeted incentive scheme which provides funding focussed on specific productivity improvement technologies and practices that has industry-wide benefits.

Box 1 Network Innovation Scheme

Ofgem's network innovation scheme for gas distribution businesses in the UK comprises three elements:

- A Network Innovation allowance (NIA) to fund small-scale innovation projects

[21] AER, *Draft decision, Australian Gas Networks Access Arrangement 2016 to 2021, Attachment 14 – Other Incentive schemes*, November 2015, p. 14-18.

- 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.
- 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:

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

The NIA projects must also:
- have the potential to develop learning that can be applied to all gas businesses
- have the potential to deliver net financial benefits to network customers
- 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:
- undertake a project eligibility assessment against the above criteria
- register their projects for funding
- report details of their expenditure
- prepare an annual summary of its NIA activity.

Introduction of this scheme would address one of the concerns expressed by the businesses that they are not incentivised to innovate. If we were seeking to enhance incentives for gas DNSPs but were seeking a cautious choice in an effort to avoid potential problems with a CESS, an NIS could serve as an interim step. This is because the NIS can be implemented independent of a CESS but still result in efficiency improvements. However, we note the following:

- The businesses can currently propose capex which promotes innovation in their proposals (which we have accepted in the past).[22] Thus, it is unclear as to why an additional funding scheme needs to be developed;

- The NIS as described in the Issues paper includes wider objectives such as encouraging projects which have low carbon and environmental benefits. We would need to test how these objectives are consistent with the NEO which focusses on efficiency; and

- The introduction of both a CESS and NIS would significantly increase the incentives faced by NSPs given even a CESS by itself represents both a

[22] For example, the HDPE inspection camera approved in AER, *Final decision Australian Gas Networks Access Arrangement 2016 to 2021, Attachment 6 – capital expenditure*, May 2016, p. 6–23

smoothing of the incentive over the regulatory period and an increase in incentives to 30 per cent on average over the regulatory period in addition to an extra capital allowance for innovative projects under an NIS allowance.[23]

Power of incentives

The Issues Paper also discusses the concept of the power of incentives, the arguments for and against high or low-powered incentives, and how the power of incentives that reflect how much benefit or reward of efficiencies is retained by the business might be set in the future. The conclusion is that when we set 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.

In the development of the CESS for electricity, we considered there to be two key issues in setting the level of reward or penalty for any capex underspend or overspend:

- The reward should not be so high that it incentivises inefficient capex deferral. This could result in consumers paying too much for the capex (since they might fund the same capex in multiple regulatory control periods). Alternatively, consumers could experience a decline in service levels.

- The power of the incentive should be set so as to achieve balance between the incentives for capex, opex and service. In other words, changing the sharing ratio means a likely change to the current EBSS sharing ratio and a further balancing of incentives on service quality (potentially stronger incentives to maintain service quality with a higher powered CESS and EBSS).

AGN proposed an incentive for the current EBSS and proposed CESS of 50:50 sharing ratio. AGN argued that it had been subject to incentive regulation for some time and, similar to other businesses, ongoing efficiency improvements are more difficult (and costly) to achieve.[24] We note AGN's proposed CESS with a sharing ratio of 50:50 (with an EBSS of 50:50) appears to be based on what is applied to the UK gas businesses. Appendix B provides a summary of the revenue and incentive setting arrangements in the UK. Our research indicates that the UK incentive scheme (and linked expenditure assessment approach) operates very differently compared to Australia such that a simple comparison of sharing ratios may not appropriate and possibly misleading. Further, we note that the assessment/forecasting approach to capex in the UK is distinctly more detailed that in Australia which may increase the confidence that underspends are genuinely due to efficiency gains.

The CUAC expressed a concern that with a higher powered incentive scheme, capex forecasts are likely to be biased upwards due to information asymmetry between regulator and distribution businesses.[25]

The underlying information asymmetry between the regulator and the regulated business exacerbates this issue. This is because we do not have the assessment toolkit and a countervailing incentive mechanism to address an increase in a regulated business' incentive to overstate its capex requirements.

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[23] Without a CESS, the incentive to reduce expenditure is based on the WACC. The higher the WACC, the higher the incentive to spend less than the capex allowance. However, this incentive declines throughout the period. On average a 30 per cent sharing ratio will result in a higher incentive for the NSP relative to no CESS.

[24] Australian Gas Networks, *SA Access Arrangement Information*, July 2015, p. 92.

[25] Consumer Utilities Advocacy Centre, Response to incentive mechanisms positions paper, 3 August 2016, p. 3

In electricity, we have the benefit of additional models such as the repex model. In the UK, Ofgem mitigates this risk with an information quality incentive (IQI) mechanism. We discuss Ofgem's regulatory framework in more detail in appendix B.

Overall, we conclude that if a CESS is applied, a more cautious approach should likely be taken as the balancing of incentives – capex, opex and service quality/safety – is new to the gas sector. A major strengthening of incentives to the level in the UK could have unintended distortionary effects on outcomes. We discuss some of the risks in applying a CESS, as well as safeguards against them below.

Deferral of capex

<u>Evidence of deferrals</u>

During the 2008-12 review, the ESCV expressed concern that the CESS, applied to both electricity and gas, without volume adjustments, was delivering inappropriate incentives to defer capex to a later AA period where deferred capex is included in the capex allowance for subsequent AA periods. The ESCV therefore ceased applying the CESS to the Victorian electricity DNSPs. It continued to apply the CESS to the gas businesses but adjusted the capex benchmarks to reflect actual volumes of work undertaken during each year. In particular, the ESCV considered that the nature of capex in the gas industry, and its ability to monitor volumes and unit rates better than the electricity industry provided it with the ability to adjust benchmarks to reflect the actual amount of capital works undertaken.[26]

We assumed responsibility for regulating the Victorian gas DNSPs for the 2013-17 AA period, and at this time the gas NSPs proposed to maintain the same capex efficiency carryover mechanisms (ECMs) that had applied for the previous two regulatory periods.[27] After reviewing actual and forecast capex from the 2003-07 and 2008-2012 AA periods, we ceased applying the gas ECMs as we assessed that the NSPs were increasingly deferring their capex programs in order to reduce expenditure. In particular, we made the observation that the incentive to defer capex, even when it is not efficient to do so, comes from the businesses incentive to potentially receive a return on that deferred capital via three separate channels; that is:

- in the ex-ante capex allowance;
- in the return on the unspent capex provided by the CESS; and
- if the same (deferred) capital projects are proposed in the next review.

We observed that deferrals had occurred in all capex categories, but particularly in non-volume driven capex, for instance, AusNet Services earnt positive capex carryovers in 2008, 2009 and 2010. Significant underspending in the non-volume driven capex categories such as IT, had driven the positive carryovers. Moreover, the forecast capex for 2012 and the 2013-17 AA period in these categories was higher than the allowances suggesting that the underspending in these capex categories could be due to deferral.[28]

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[26] ESCV, *Draft Decision, Gas Access Arrangement Review 2008-2012*, 28 August 2007, pp. 523-524.

[27] AGN (Envestra) initially proposed not to include an incentive mechanism for capex nor opex. Our draft decision was to include an opex incentive mechanism. AGN's revised proposal argued that if an opex incentive mechanism was to be applied, a capex incentive mechanism should also apply.

[28] AER, Access arrangement draft decision SPI Networks (gas) Pty Ltd 2013–17, Part 2 attachments, September 2012, p. 261.

While deferral of some capex may be seen to be efficient because it minimises the total cost of service provision, it can be difficult to determine whether the deferral is actually efficient or whether it is simply cost cutting. Inter-period deferral of capex is not a problem in and of itself. Where a business defers capex across access arrangement periods, it may be an indication of efficiency gains. For instance, if a DNSP can use current assets productively for longer, deferral reduces the need for additional investment today. Where the deferred capex has no impact on a business' forecast of capex for the next access arrangement period, all else being equal, consumers will be better off from such deferral. However, overall, we made the decision to cease applying the capex ECM as we considered it creates incentives to defer capex even when it is not efficient to do so. Further, we could not be certain as to the effect on service quality from deferral as there were no means to monitor service quality in gas. Thus, we concluded that the overall potential risk of underinvestment in the pipeline outweighed the potential benefits of the incentives to generate capex efficiencies, and therefore a capex incentive mechanism would result in outcomes inconsistent with the requirements of the RPPs and r. 98 of the NGR.

The ENA noted that gas DNSPs are subject to 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. The ENA further noted that, to the extent that the incentive problem exists, there are practical solutions available to address this issue. For example, the deferred capex adjustment mechanism for electricity businesses.[29]

In electricity, a complementary service incentive scheme provides comfort that any savings rewarded through the CESS reflect increased efficiency, not just underspending, and the scope for deferrals that may not be in the long term interest of consumers is minimised.

In contrast, we have experienced difficulties in assessing the efficiency of deferred gas capex in our most recent review of AGN's mains replacement proposal. In that case, AGN re-proposed replacement of main pipes in the CBD area, the most expensive area to replace main pipes. It would have achieved significant capex savings in the current period as we based the forecast allowance on the higher CBD unit rates. While AGN provided reasons for the change in the composition of its mains replacement program over the current period, the absence of clear performance and reliability targets meant that there were difficulties in assessing the effect of this deferral on the overall risk of the network.

We also consider that the risk of businesses losing a distribution licence due to failure to meet 'best endeavours' performance targets for a particular access arrangement period would be low. While relevant technical regulators will generally support the mains replacement programs proposed by gas businesses on the basis of long-term safety and reliability objectives, there is some flexibility in how, and over what period, the mains replacement programs under the relevant safety management cases are implemented. This can create a tension for us in setting specific five year allowances for proposed mains replacement capex programs. For example, AGN, in its last completed access arrangement period for Victoria, undertook only 62 per cent of its proposed mains replacement program as approved by the ESCV and ESV. Despite this performance,

[29] Energy Networks Association, Response to Issues Paper – incentive mechanisms for the Victorian Gas Distribution Businesses, 29 July 2016, p. 3.

AGN was not found to be in breach of is gas safety case or any other relevant technical and safety obligations.[30]

The CUAC also noted that there could be a significant time-lag between deferred capex and potentially adverse consequences in service quality.[31]

Mechanism to mitigate the incentive to defer between regulatory periods

Deferral mechanism

In developing the Capital Expenditure Incentive Guideline for electricity, we recognised that in some circumstances a CESS could lead to consumers not sharing in the benefits where capex is deferred from one regulatory control period to the next regulatory control period. To help consumers share in the benefits from deferred capex, in addition to an ex-post review facility, the Guideline provides for us to make an adjustment to the CESS payments where an NSP has deferred capex in the current regulatory control period and:

- the amount of the deferred capex in the current regulatory control period is material, and
- the amount of the estimated underspend in capex in the current regulatory control period is material, and
- total approved forecast capex in the next regulatory control period is materially higher than it is likely to have been if a material amount of capex was not deferred in the current regulatory control period.[32]

The mechanics of a potential gas CESS should include a deferral mechanism such as that used in the electricity CESS in addition to the ex-post review function already provided in the NGR.

Volume-adjusted CESS

Another possible option to reduce the incentive to defer between regulatory periods is by applying a CESS that adjusts for volumes of capex.

With a volume adjusted CESS, for volume-driven capex (such as mains replacement and connections), we would adjust/substitute the benchmarks for each year with actual volumes. For instance, if the business proposed undertaking 50 km of mains replacement in the first year of the AA period but only does 30 km, the allowance for the first year is adjusted to reflect 30km of mains replacement. We would not adjust unit rates.

As noted previously, the ESCV applied a volume-adjusted CESS in the 2008-12 AA period, rather than removing the CESS as it did in electricity. By adjusting the capex benchmarks to reflect the actual volume of work undertaken in each year, the businesses would not be able to defer volumes of work, limiting the returns that a business can achieve in deferring capex.

[30] AER, Access arrangement draft decision Envestra Ltd 2013–17, part 2 attachments, September 2012, p. 84

[31] CUAC p. 3

[32] AER, *Better regulation capital expenditure incentive guidelines for electricity network service providers,* November 2013, p. 9.

Balanced incentives for cost reduction and service quality

The Issues Paper notes that a challenge in incentive regulation design is balancing incentives for cost reduction and achieving appropriate service quality/safety. In developing the STPIS for electricity businesses, we had to consider:

- the need to ensure that the incentives are sufficient to offset any financial incentives the NSP may have to reduce costs at the expense of service levels
- 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 NSPs
- the willingness of the consumer or end user to pay for improved performance in the delivery of services.

We have previously recognised the need to balance incentives for cost reduction with incentives to maintain or improve service quality. We did not approve AGN SA's recent proposal for a CESS in part because of the absence of an existing framework for service level performance.

To mitigate the risk of inefficient reduction in service levels, the CESS for electricity complements existing incentive schemes for opex (EBSS) and service standards (STPIS).[33] The EBSS and STPIS mitigate the incentives for NSPs to inefficiently underspend because any capex deferral is likely to increase opex and/or reduce STPIS payments.[34]

However, there is not an equivalent service scheme in gas distribution and service standard obligations are minimal for gas distribution businesses.[35] Particularly in the case of mains replacement, a CESS enhances the incentive to underspend. There are no legislative safety or reliability requirements which mandate a certain volume of mains replacement to be undertaken within a specified timeframe. An NSP has some discretion over the level of risk that it is exposed to or is prepared to adopt.[36]

This means that a gas NSP with a CESS has a greater incentive to temporarily increase its risk profile by deferring capex such as mains replacement. A gas NSP may still meet its safety and reliability obligations even though it has reduced its mains replacement during a single regulatory period because there is no immediate impact on safety and reliability.

The Issues Paper recognises that for electricity the STPIS is a complementary scheme that works in conjunction with the CESS which ensures that service standards are not compromised by cost reductions.[37] Given the absence of a gas STPIS the question then becomes, what would an equivalent STPIS look like for gas and would it sufficiently counter the incentive to seek cost reductions at the expense of service quality?

Currently there are two schemes which take into account service quality in Victorian gas distribution. These are unaccounted for gas (UAFG) and guaranteed service levels

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[33] AER, *Better regulation capital expenditure incentive guidelines for electricity network service providers, Explanatory statement*, November 2013, p. 10.

[34] AER, *Better regulation explanatory statement draft capital expenditure incentive guidelines*, August 2013, p. 22.

[35] Under the Gas Industry Act 2001 (Victoria).

[36] AER, *Multinet Access Arrangement draft decision Part 2 attachments*, September 2012, p. 60.

[37] Farrier Swier, Issue Paper, *Incentive mechanisms for the Victorian Gas Distribution Businesses*, p 36.

(GSL). However, we are not convinced that these schemes provide a substantive countervailing incentive to deter inefficient cost reductions.

Unaccounted for gas

UAFG is the difference between the metered gas that has been injected into the distribution system and the metered gas withdrawn by the customers. The activities to address UAFG relate to leaks management and metering accuracy management. The Victorian gas NSPs have noted that there is no clear relationship between UAFG levels and mains replacement.[38] For instance, some leaks are due to faulty meters or meter reads, and sometimes it is unclear where the leaks are coming from. In its report to the ESCV, Zincara noted that safety concerns rather than UAFG were the main driver of mains replacement.[39] Therefore we do not consider that UAFG would likely provide an appropriate counter balance to the enhanced incentive for capex deferral under a CESS.

Guaranteed service level

Under the Victorian gas GSLs, distributors must make payments in recognition of poor service, but those payments are not intended as compensation. [40] The objective of Victorian GSL scheme is to encourage distributors to improve service and reliability levels of the “worst served customers”. Assessment of GSL payments over time are not likely to be a useful indicator of service quality as these are paid to the worst serviced customers, a small and specific proportion of the customer base and payments are generally immaterial to the business.[41] It is therefore questionable whether GSL payments will provide an incentive for a gas distribution business not to defer a capex project and effectively balance the incentives for cost reduction and service quality and do not reflect the avoided costs of not providing those services.

Customer Service Incentive Scheme

In the recent South Australian gas review (in which a GSL is not currently used) AGN noted that the majority of its customers supported the introduction of a GSL. However, the Essential Services Commission of South Australia identified practical constraints, such as data availability, made such a scheme difficult to implement at this time. In the interim AGN proposed to develop a Customer Service Incentive Scheme (CSIS) and implement it during the next access arrangement period with parameters as follows:

- customer service incentive strength of ±1% of revenue (similar to similar schemes that apply elsewhere);
- areas of customer service targeted by the scheme:
    - telephone responsiveness – leaks and emergency line;
    - telephone responsiveness – general enquiry line; and

38 Zincara, *Review of gas distribution businesses*, 7 April 2013, p. 14.

39 Zincara, *Review of gas distribution businesses*, 7 April 2013, p. 15.

40 If a residential natural gas customer experiences more than 6 unplanned interruptions in a 12 month period, due to faults in the distribution system, they may be eligible to receive a payment for each subsequent event in that calendar year. If the gas supply isn't restored within 12 hours, the customer is to be paid an amount provided the cause is not beyond the gas distributor's control. If the customer experiences damage or any other monetary loss directly related to the incident and exceeds the GSL monetary limit, they can lodge a compensation claim with their local distributor.

41 In 2012, of the Victorian businesses, AGN (previously, Envestra) made the most GSL payments totalling $81,854.

- number of complaints.[42]

We did not approve the proposed CSIS in our draft decision because we did not think it appropriate to approve the introduction of a CSIS ‘in principle’ before a scheme has been developed and we questioned whether the potential benefits of such a scheme would justify the cost of its introduction to AGN’s customers, given high levels of customer satisfaction with its current performance.[43] AGN accepted our draft decision on this matter on the basis that we would revisit the proposal through more appropriate consultation.[44]

This differs to electricity where the STPIS balances the incentives the CESS creates to reduce capex with a financial incentive to maintain or improve on the performance levels funded through the approved forecast revenue requirement. By putting revenue at risk where performance falls below pre-defined targets, the STPIS discourages a business from seeking to maximise benefits from the CESS by reducing capex at the expense of reliability, safety and security of its network.

Similarly, in the UK where a gas CESS applies, gas NSPs are required to deliver specific outputs as part of their price control arrangements in areas of network safety, network reliability, customer service, new connections, social obligations and protecting the environment. Where NSPs do not meet their output commitments, OFGEM can take appropriate action.[45]

AGN proposed its CSIS as a standalone scheme seeking to incentivise improvements in customer service rather than as a countervailing restraint on inefficient cost reduction under a CESS. The Issues Paper goes further by recognising the need for a complementary service quality measure however; it only incrementally broadens those parameters proposed by AGN in its SA access arrangement proposal to include response to publicly reported gas leaks and 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).[46]

Given current high levels of service quality associated with the parameters described above it is questionable whether any incentive scheme limited to them will be material enough to offset inefficient cost reductions. Incentive schemes should reflect both the financial incentives and the social benefit or social costs of the actions the NSP undertakes.

However, the consequences or the benefits of a DNSP’s actions may not be fully reflected back to the NSP when making capex decisions.

For example, mains replacement has been a large component of capex for gas businesses in Australia over the previous regulatory periods. The increased risk from a NSPs decision to defer mains replacement into the following regulatory period is borne by customers and not the NSP. This is because, in the short term, a slight increase in the

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42 Australian Gas Networks, *SA Access Arrangement Information*, July 2015, pp. 200-201.

43 AER, Draft decision, *Australian Gas Networks Access Arrangement 2016 to 2021, Attachment 14 – Other Incentive schemes*, November 2015, p. 15.

44 Australian Gas Networks, *Revised SA Access Arrangement Information*, January 2016, p. VI.

45 For example, National Grid Gas was fined £1 million for failing to meet its repair risk target in three of its four networks.

46 Farrier Swier, Issue Paper, *Incentive mechanisms for the Victorian Gas Distribution Businesses*, p. 37

risk of the network does not necessarily translate to an increase in the number of safety incidents.

Even with a CSIS as described above, the NSP will not share in any of that cost because it is unlikely that an assessment of these parameters would result in a penalty for the NSP. Something more is required so that the NSP is exposed to the potential degradation of assets indirectly felt by customers.

Our concerns with a CESS in place with no equal incentive to maintain or improve service standard was also expressed by the SA Government in response to AGN's revised proposal:

> Until there is a complementary scheme of providing incentives for maintaining or improving reliability levels, such as the STPIS which applies for electricity, there is a greater risk that achieving capital expenditure underspends through an incentive mechanism may undermine network reliability and safety. Noting that ESCOSA has determined to not set binding reliability standards for AGN's 2016-21 period, but will be monitoring and publicly reporting on AGN's performance, it is critical that any CESS needs to be introduced alongside quantifiable service reliability measures with appropriate time series measurable data.[47]

Possible addition to CSIS, with a scheme that puts revenue at risk

We are exploring the possibility of developing a Network Health Indicator (NHI) which could be used as a benchmark to assess the effectiveness of capex spend, particularly on mains replacement. Such an indicator could be based, for example, on the current observed fracture rate of mains assets and any increase in the average fracture rate could result in the application of a penalty in some form. Ideally, such an indicator would put the businesses' revenue at risk in the event of a revealed fall in service quality like the STPIS in the electricity context.

We have not yet fully considered the practicalities of developing a NHI. We note however the development of an NHI involves considerable data collection and parameter specification that will require engagement with all businesses. We anticipate significant work to be undertaken given the service quality scheme proposed in the FSC issues paper focussed on customer service[48] and did not contain parameters that, for example, appropriately capture potential reductions in the safety of the network.

In theory this type of approach could complement a CESS scheme by incentivising an NSP to consider the measurable costs associated with deferring mains replacement where, for example, an increasing fracture rate acts as a proxy for an increased risk borne by customers (and society generally). A NHI could also be combined with other parameters of a CSIS and apply similar to the electricity STPIS as part of the tariff mechanism at the start of the next access arrangement period.

Ofgem has recently developed a Network Output Measures Health and Risk Reporting methodology and framework that has been adopted by all gas distribution networks for the assessment, forecasting and regulatory reporting of asset risk. This methodology

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[47] Government of South Australia, *AGN Access Arrangement – submission to Draft Decision and Revised Proposal*, 24 February 2016, p. 3.

[48] Farrier Swier Consulting, Issues paper Incentive mechanisms for the Victorian gas distribution businesses 2018 to 2022 gas access arrangement review, 10 June 2016, p. 56

captures multiple variables of gas mains risk but is premised on the general idea of loss of containment of gas being the ultimate risk leading to a failure of the system.[49]

It is also a generally accepted view that gas distribution services have relatively high reliability and safety and that customers are generally satisfied with customer service and reliability levels.[50] As such, it may be appropriate for any index penalty to act asymmetrically so that any drop in relative service is penalised while any improvements are not rewarded. This would ensure that safety and reliability is maintained but resources are not wasted in improved services that the customer does not value.

Summary of options

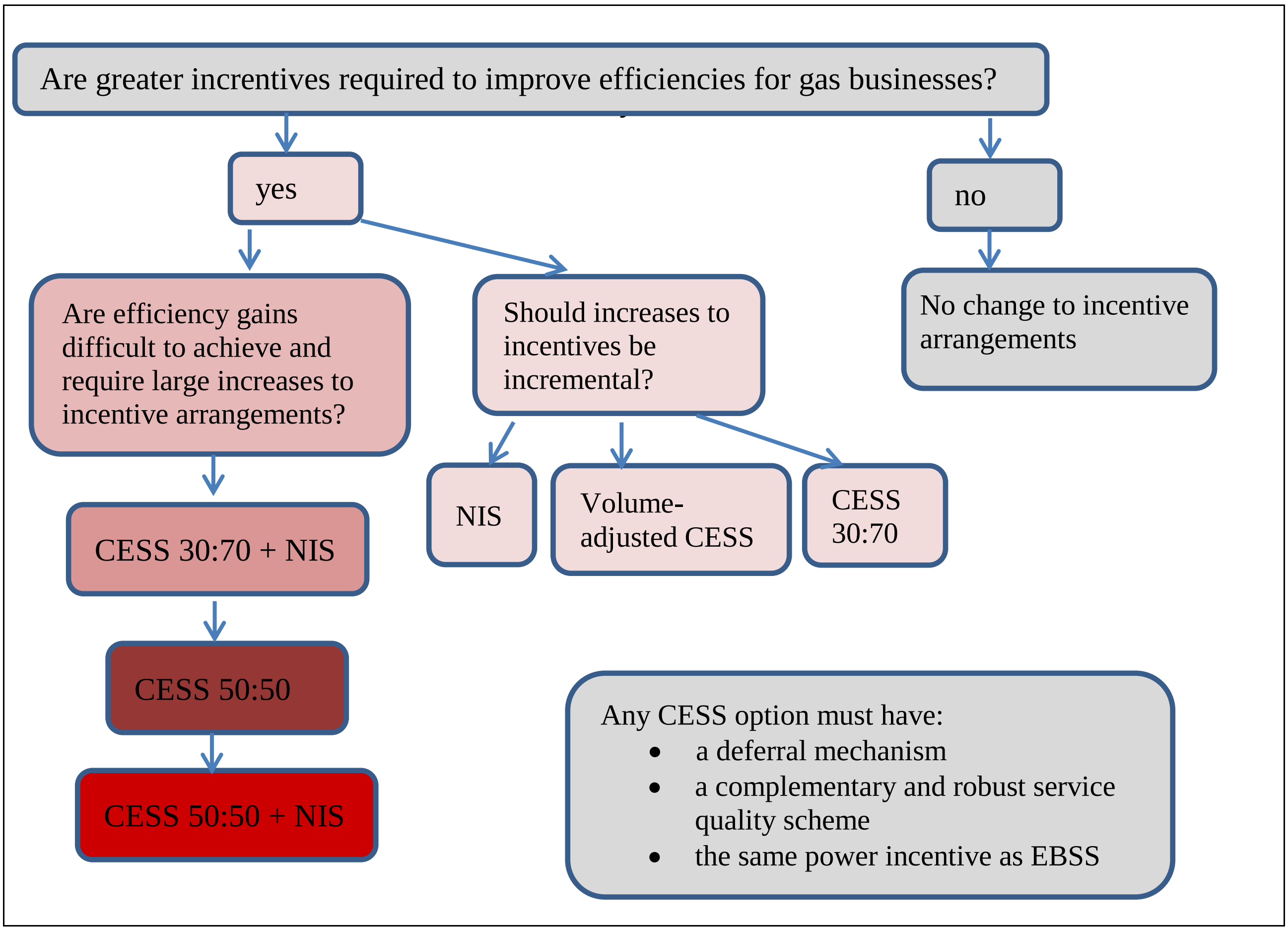
As outlined previously, there is mixed evidence to suggest whether Victorian gas businesses require further incentives in addition to the incentives already applied. There are also risks with changing the regulatory incentive framework that may have unintended consequences, such as inefficient capex deferrals. These risks might be mitigated by ensuring measurable costs and benefits associated with the businesses' decisions are appropriately quantified and reflected back to the business. As discussed above, a network health indicator might supplement the customer service scheme AGN proposed in the SA review.

Figure 1 outlines the escalating increases to incentive arrangements for gas businesses. At each point we must make a decision about whether our overall objective of seeking further efficiencies for gas businesses are appropriately balanced against the risk of reduced service quality, the difficulty in identifying inefficient deferrals (as part of the deferral mechanism) and general strategic behaviour by businesses, particularly because asymmetric information difficulties hamper forecasting.

[49] Ofgem, *Network Output Measures Health & Risk Reporting Methodology & Framework*, September 2015.

[50] Australian Gas Networks, *SA Access Arrangement Information*, July 2015, Attachment 3.9, Deloitte Stakeholder Insights Report

Figure 1 Options when considering incentive arrangements for gas distribution businesses



Should there be a bespoke or single uniform capex incentives for all gas DNSPs?

In implementing any changes to the current capex incentives we must consider whether the same capex incentive arrangements should apply to all gas DNSPs or whether there should be bespoke capex incentives for each gas DNSP.

At this state we have not formed a view on this matter and it will depend on the type of incentive arrangements proposed by gas DNSPs.

The findings paper noted the Jemena considered it would be sensible to have a single uniform CESS. The CUAC considered it would be inappropriate for DNSPs to receive different sharing ratios. It also noted that it would add further complexity and increase the burden on us.[51]

As noted above, we have full discretion as to whether to approve the inclusion of an incentive mechanism in an access arrangement. We will base our decision on whether the inclusion of an incentive mechanism is in the long term interests of customers.

[51] Farrier Sweir Consulting, Findings Report – Victorian gas distribution businesses' consultation on incentive mechanisms 2018 to 2022 Gas Access Arrangement Review, 23 September 2016,, p. 15

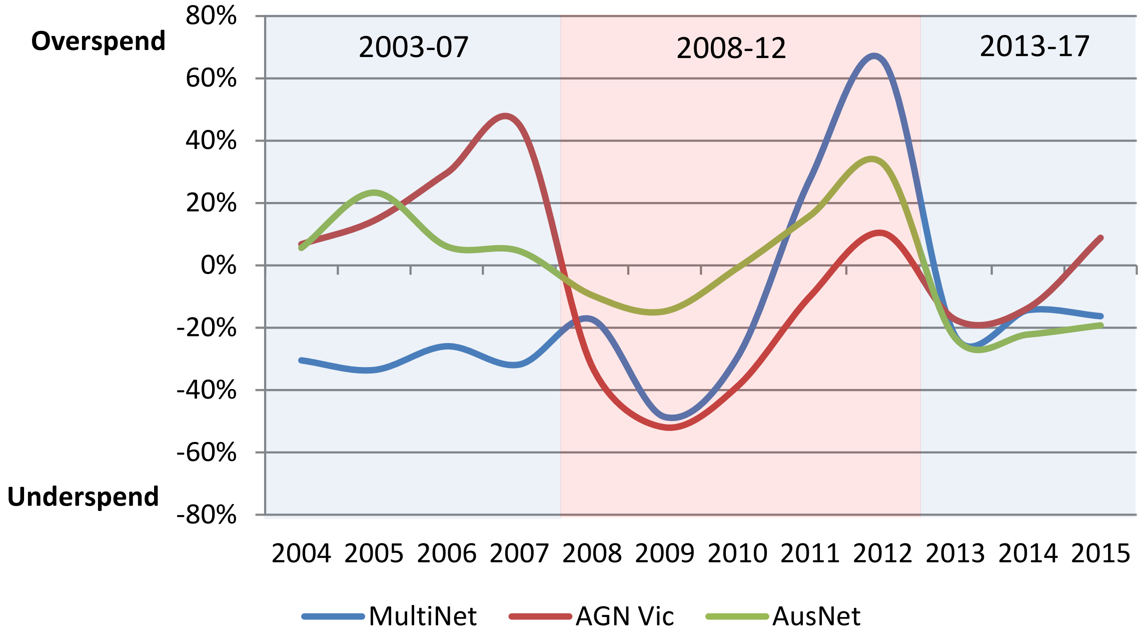
We note that changes to capex incentives may impact on each network and their customers differently. We must be satisfied that customers are better off in the long term and we must consider the circumstances that are unique to each DNSPs and their customers.

Further, DNSPs that propose a change in the current capex incentive arrangements may not necessarily propose the same suite of incentive schemes. For example, DNSPs may propose a different countervailing incentive scheme to deter inefficient cost reductions.

Appendix A Comparing actual and allowed capex for the Victorian gas DSNPs

Figure 2 compares the businesses' actual, allowed and proposed capex for the 2003-08, 2008-12 and 2013-17 AA periods in percentage terms.

Figure 2 Actual capex relative to the capex allowance in percentage terms, 2003–08, 2008–12 and 2013–17 AA periods



Source: AER analysis

There were particular circumstances during 2008-12 and 2013-17 AA periods which make interpretation of the capex profile difficult.

The previous regulator, the Essential Services Commission of Victoria (ESCV), applied a capex ECM to gas NSPs in Victoria for the 2003-07 and a volume-adjusted CESS[52] in 2018-12 AA periods (under the Gas Code). This capex ECM was an incremental rolling incentive scheme, with a carryover period of five years and a 30:70 split of efficiency gains or losses between the NSPs and customers.[53] The AER assumed responsibility for regulating the Victorian gas NSPs for the 2013-17 AA period, and removed the CESS in its review in 2012.

The transitional arrangements set out in the gas DNSPs 2008-12 access arrangements were drafted in a way that referred only to rewards (increments) being applied in a CESS (that is, the access arrangements did not refer to penalties (decrements)). Thus, the gas

[52] With a volume adjusted CESS, for volume-driven capex (such as mains replacement and connections), the benchmarks for each year are adjusted/substituted with actual volumes. For instance, if the business proposed undertaking 50 km in the first year of the AA period but only does 30 km, the allowance for the first year is adjusted to reflect 30km of mains replacement. Units rates are not adjusted.

[53] An incremental rolling incentive scheme carries forward marginal underspends and overspends in expenditure for a fixed period. The benefits to a NSP will depend on the discount rate. The EBSS for opex is an incremental rolling mechanism. Under a fixed sharing scheme, the NSP receives a fixed share of the benefits of an underspend or overspend. Our CESS for electricity is a fixed sharing scheme. OFGEM also previously used a fixed sharing scheme for capex.

DNSPs capex profile of increasing capex spend over the AA period appears consistent with the incentive to overinvest towards the latter years given no imposition of a penalty at the end of the AA period.[54]

Interpretation of the businesses' capex profile over the 2013-17 period is also difficult. In particular, the profile of actual capex spend is influenced by the pass-through scheme the AER imposed during the 2013-17 AA period. During this period, the AER based the businesses mains replacement allowances on historical volumes, due to the businesses continuously replacing significantly less than the benchmark. During the 2013-17 period, the businesses could then apply to the AER for additional capex, once the businesses' spent about 80 per cent of their historical volumes.[55]

[54] Of interest is that in its final decisions for the gas DNSPs, the AER chose to apply the CESS penalty. Multinet appealed this decision, and we conceded given, amongst other things, the loose drafting of the transitional arrangements in the AAs which does not refer to penalties (decrements) when applying a CESS.

[55] The unit rates approved in the final decision are applied in calculating the expenditure amount for the pass through. In submitting the pass through the business is required to provide evidence of the completion the mains replacement set out in our final decision. This should include independently verifiable information.

Appendix B Ofgem gas regulatory framework – setting allowances and incentives

In its draft plan for the Victorian review, AGN has proposed a 50:50 sharing ratio for its CESS (and EBSS). This is consistent with its proposal in SA, which was finalised this year. AGN considered the power of our incentive regime should be more in line with the incentive schemes applied by Ofgem.[56] AGN also noted that the incentive rates for gas businesses in the UK can be as high as 65 per cent. [57]

Our research on the regulatory framework in the UK suggests that there are distinct differences between the revenue allowance and incentive setting framework in the UK compared to Australia. These differences mean that a simple direct comparison of CESS sharing ratios applied in the UK and Australia is not informative and could lead to misleading conclusions.

This appendix describes some of the key features of Ofgem's regulatory model - the RIIO (Revenue = Incentives + Innovation + Outputs) that distinguish it from the Australian regulatory framework. We summarise:

1. the RIIO's output-led framework - unlike our regulatory framework, Ofgem through its economic benchmarking and extensive data collection identifies outputs and performance targets for these outputs; and
2. the RIIO's focus on an upfront financial efficiency incentive to provide well-justified proposals through an information quality scheme (IQI). The high incentive rate that can be applied is intended to encourage proposals similar or better than Ofgem's benchmark allowance. Underlying Ofgem's application of a high incentive rate is the confidence it has in its economic benchmarking which is used to set the benchmark allowance. In contrast, our assessment of a businesses' proposed expenditure does not have the same rigour as Ofgem's economic benchmarking nor is our framework based around providing financial incentives to encourage better proposals.

We also note that Ofgem continues to refine its RIIO model, this includes reviewing its incentive schemes.

The RIIO's output based framework

In October 2010, Ofgem commenced its new regulatory model, the RIIO which is used to set prices for gas and electricity businesses. This model was first used to set prices for gas distribution in 2013. Prior to this, Ofgem applied a RPI-X[58] price control.

The choice and measurement of outputs - is a key aspect of its RIIO model. Once outputs are chosen, then revenues and incentives are then determined to deliver these outputs. [59] Figure 3 below shows how outputs feed into Ofgem's revenue requirement.

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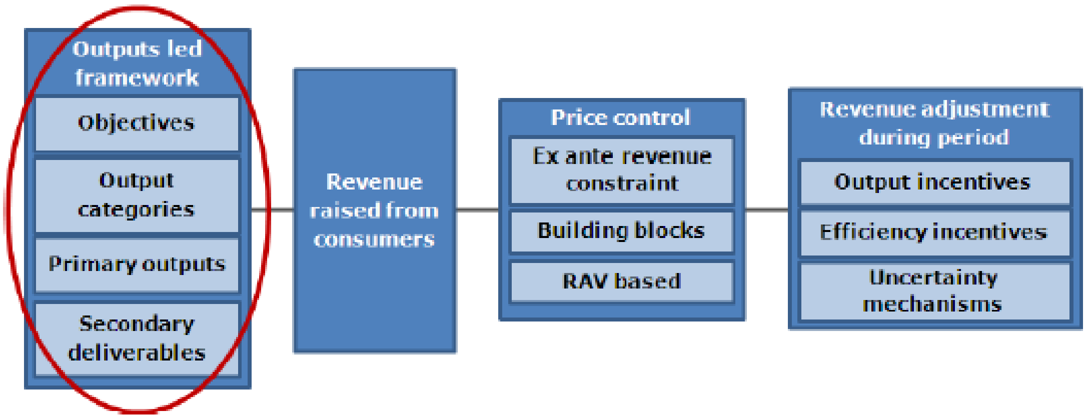
56 AGN, Access arrangement information South Australia, July 2015, p. 197.

57 AGN, Access arrangement information South Australia, July 2015, p. 196.

58 Since 1990 the privatised energy businesses have been subject to RPI-X regulation. The rate of change in average revenue was subject to an annual cap linked to the retail price index and an additional X factor.

Figure 3: Ofgem's outputs framework



Source: Ofgem, Handbook for implementing the RIIO model, 4 October 2010, p. 31.

Ofgem identifies the following six broad output categories (and examples of outputs in these categories):

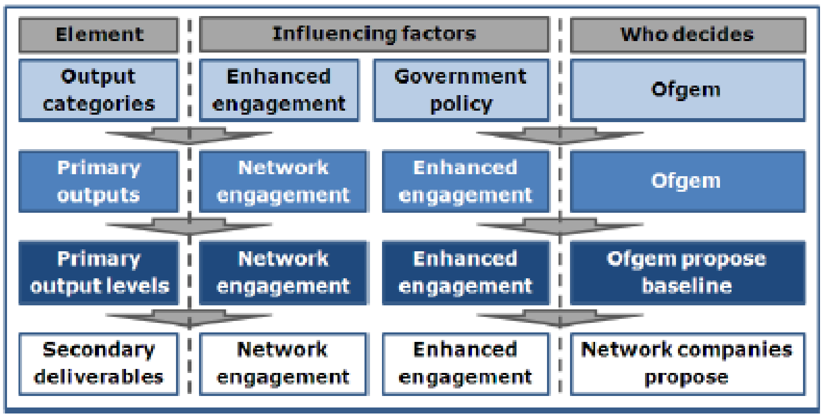
- Customer satisfaction (customer service surveys)
- Reliability and availability (supply restoration and minutes lost)
- Safety (minimum legal requirements)
- Conditions for connections (time to connect an entry/exit node)
- Environmental impact (carbon footprint)
- Social obligations (targets for vulnerable customers)

At each price control review, Ofgem will set a baseline level of performance for each of these outputs at which the network companies are expected to operate at. These performance targets are based on Ofgem's economic benchmarking and significant stakeholder engagement. To determine the appropriate outputs and related performance targets, Ofgem's data collection exercise is extremely comprehensive, and at a very granular level. For instance, to determine the appropriate performance target for the safety output, for each of the ten gas assets (eg. distribution main pipes), Ofgem collects information about 50 parameters (with detailed written definitions as to how these parameters should be measured).

Figure 4 below shows the process for setting outputs during Ofgem's price control review. As can be seen, Ofgem plays a significant role in setting the baseline level of outputs.

[59] Ofgem, Handbook for implementing the RIIO model, 4 October 2010, p. 31.

Figure 4 Process for setting outputs during the price control review



In its price control review process, Ofgem specifies the level of outputs early and the energy businesses then set out in their proposal on what primary outputs they will be delivering and the associated cost of delivering these outputs. Ofgem then sets base revenue to reflect what is needed to fund delivery of the primary outputs. Ofgem does not place any requirements as to whether the expenditure to deliver the baseline level of outputs should be opex or capex.

The secondary deliverables, as noted in Figure 4, are those tasks required to delivery primary outputs over time. Ofgem expects the businesses to seek out better ways of delivering primary outputs. For instance, it considers that secondary deliverables should look to manage network risk, improve the planning of the delivery of primary outputs and seek technical and commercial innovation where possible.

The RIIO's focus on an upfront financial efficiency incentive to provide well-justified proposals through an information quality scheme (IQI)

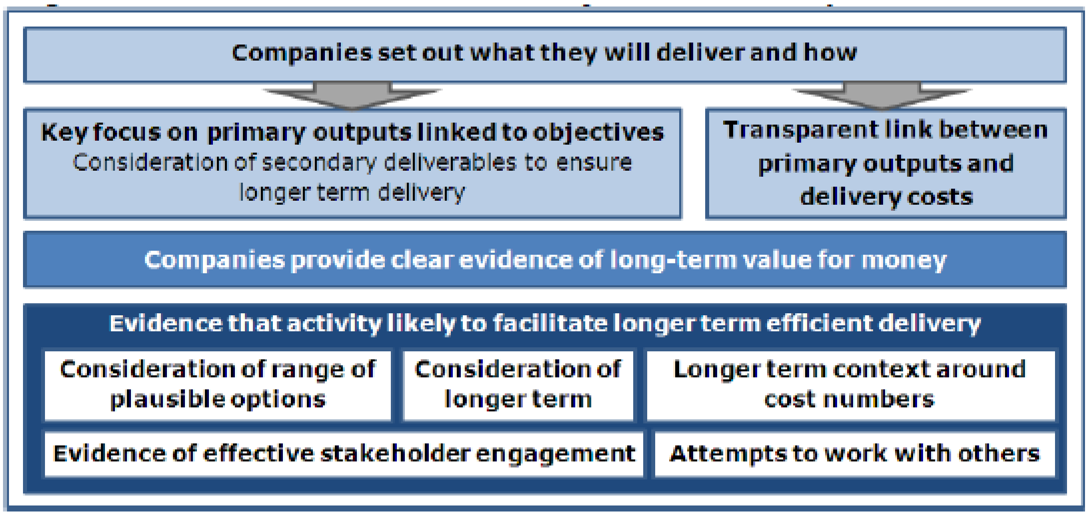
Ofgem may depart from its initial base level of performance target if a company can present a persuasive cause that the level of performance they delivery should be incrementally lower or higher than the base level, except for where it the minimum level is set by the government or Health and Safety Executive.

Ofgem notes that its revenue requirement is informed by the plans put forward by the businesses. However, the onus is on the businesses to justify their view of required expenditure to deliver required outputs. Ofgem requires the proposals to be centred on the primary outputs, including the performance level for the primary outputs. The proposals will also have to demonstrate engagement with stakeholders and long-term value for money.[60]

Figure 5 below shows Ofgem's requirements for a well-justified business proposal.

[60] Ofgem, Handbook for implementing the RIIO model, 4 October 2010, pp. 52–53.

Figure 5 What will be included in a well-justified business proposal



Incentivising well-justified proposal

Ofgem identified the following reasons a business would be incentivised to submit a well-justified business proposal:

1. The business is likely to be subject to less intensive scrutiny;
2. The use of the Information Quality Incentive (IQI) provides a financial incentive for companies to spend the time and resources necessary to produce high quality and well-justified business plans;
3. It is more likely that the final price control will reflect what is in the plan;
4. The company's price control may be set earlier than others, freeing them up to focus on delivery of network services; and
5. The company's reputation will be higher with stakeholders and Ofgem.

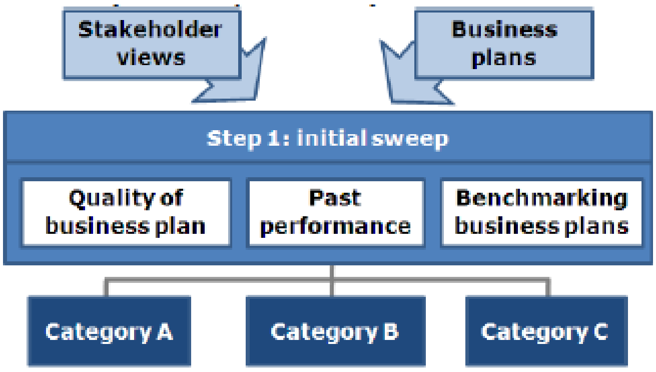
The first two points are discussed further below, as these contrast distinctly from our incentive framework.

Ofgem's initial sweep/review of the businesses proposal

To determine whether a businesses' proposal should be further scrutinised, Ofgem undertakes an 'initial sweep' which takes into account stakeholder views and the businesses' proposal. Ofgem makes an assessment based on the businesses' proposal, performance during the previous regulatory period and benchmarking of the businesses' proposals. It then categories the businesses' proposal.

Figure 6 below shows the steps in Ofgem's initial sweep of the businesses' proposal.

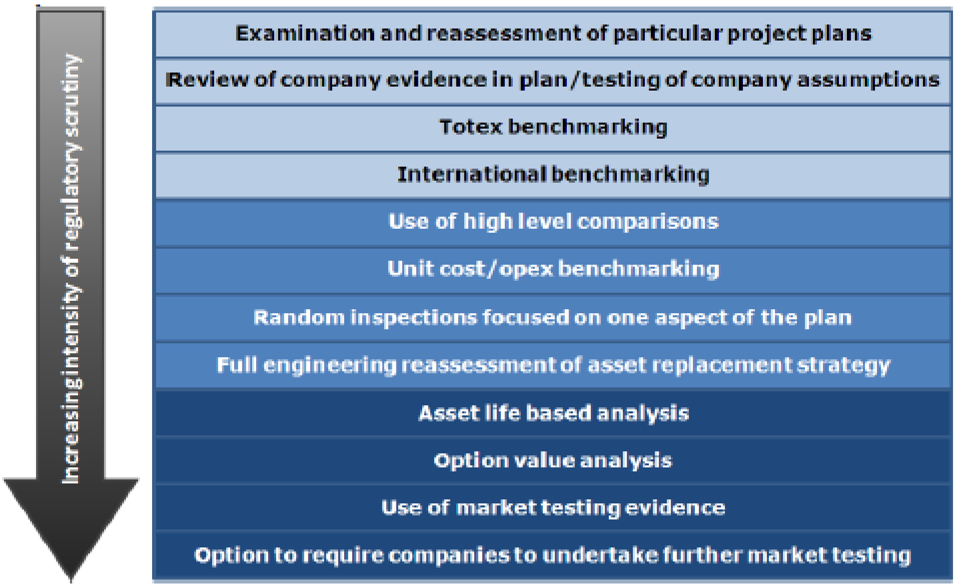
Figure 6 Ofgem's initial sweep



Step 2: Implications for assessment			
	Category A	**Category B**	**Category C**
Intensity of scrutiny	Low	Moderate	High
Typical assessment method	➢ Review/follow up questions ➢ Short assessment of business plan	➢ Focus on deficiencies in plan/past performance ➢ Analysis of condition of formerly unreliable assets ➢ Random inspections	➢ Full engineering and policy based analysis ➢ Follow up analysis ➢ May require significant new data from company
Timing of final proposals	Potentially early settlement	Final proposals (stage 4)	Final proposals (stage 4)

Businesses that are classified as category B or C will then be subject to Ofgem's assessment toolkit. As Figure 7 below shows, Ofgem's assessment toolkit is extremely comprehensive creating the incentive on the business to submit well-justified proposals (and to be identified as category A in the initial sweep).

Figure 7 Ofgem's assessment toolkit



<u>The Information Quality Incentive (IQI)</u>

The IQI is an incentive scheme that sets an upfront efficiency incentive, according to differences between the businesses' forecast and Ofgem's assessment of its (efficient) expenditure requirements to deliver particular outputs.[61]

Ofgem sets an efficiency incentive rate between 60 and 65 per cent for gas distribution businesses.[62] Thus, the IQI provides a stronger incentive than our EBSS and where a CESS is applied (where the CESS is applied with a 30:70 sharing ratio).

The premise of the IQI is to financially incentivise the business to spend the time and resources necessary to produce high-quality and well-justified business plans and deter the submission of inflated expenditure forecasts. For instance, a business is fast tracked if identified as category A in the initial sweep and will receive the maximum IQI incentive rate (about 65 per cent). This ensures that fast tracked businesses will not lose out on any financial rewards that it would otherwise have received through the IQI.

To see how the IQI operates, we use a worked example below which applies the IQI matrix. Table 2 shows Ofgem's IQI matrix for gas distribution relative to a benchmark forecast totex allowance of 100.

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[61] Ofgem, Handbook for implementing the RIIO model, 4 October 2010, p. 66.

[62] Ofgem, RIIO-GD1: final proposals – overview, 17 December 2012, p. 28.

Table 2 Gas distribution IQI matrix

1. NWO bid: benchmark ratio	90.0	95.0	100.0	105.0	107.0	110.0	115.0	118.0	122.0
2. Efficiency Incentive	67%	66%	65%	64%	64%	63%	63%	62%	61%
3. Allowed expenditure	97.5	98.8	100.0	101.3	101.8	102.5	103.8	104.5	105.5
4. Additional income	4.1	3.3	2.5	1.7	1.3	0.8	0.0	-0.6	-1.3
Actual expenditure	**Total Reward**								
85	12.4	12.4	12.3	12.1	12.0	11.9	11.7	11.5	11.3
90	9.1	9.1	9.0	8.9	8.8	8.8	8.6	8.4	8.2
95	5.8	5.8	5.8	5.7	5.7	5.6	5.4	5.3	5.2
100	2.4	2.5	2.5	2.5	2.5	2.4	2.3	2.2	2.1
105	-0.9	-0.8	-0.7	-0.7	-0.7	-0.7	-0.8	-0.9	-1.0
107	-2.3	-2.1	-2.1	-2.0	-2.0	-2.0	-2.1	-2.1	-2.2
110	-4.3	-4.1	-4.0	-3.9	-3.9	-3.9	-3.9	-4.0	-4.0
115	-7.6	-7.4	-7.3	-7.1	-7.1	-7.1	-7.1	-7.1	-7.1
118	-9.6	-9.4	-9.2	-9.1	-9.0	-9.0	-8.9	-8.9	-8.9
122	-12.3	-12.0	-11.8	-11.6	-11.6	-11.5	-11.4	-11.4	-11.4

Source: Ofgem, RIIO-GD1: final proposals – supporting document – cost efficiency, 17 December 2012, p. 62

In the table above, the bid row reflects the ratio between the businesses cost proposal and Ofgem's benchmark cost. The allowed expenditure represents a 75 per cent weight towards the benchmark cost and 25 per cent toward the businesses' submitted costs. For example, for a $100 benchmark allowance set by Ofgem, a business that proposes costs that are 90 per cent of the benchmark will receive an allowed expenditure of 97.5 (100 x 0.75 + 90 x 0. 25), and an efficiency rate of 67 per cent. It also receives an additional income incentive of $4.1 on top of its allowed expenditure for submitting a proposal lower than the benchmark. The efficiency rate is applied only if the business is able to outperform the expenditure target (in this example, $97.5). In this example, if the businesses actual expenditure is $90 (and so outperforms the expenditure target), it receives a total reward of $9.1.

Ofgem notes that the use of the IQI will be subject to review. It observes that as companies become experienced in developing well-justified long-term business plans the incremental benefits of the IQI may reduce. Ofgem also notes the potential for the benefits of the IQI may be outweighed by the costs at some point in the future and may not justify the additional administrative burden that it brings.[63]

Further potential incentives effects during the regulatory period

In addition to Ofgem's IQI scheme, there are further output incentives placed on the business during a regulatory period. This additional incentive on the performance of outputs appears to be similar to the STPIS, as it puts revenue at risk for failure to meet performance targets. Ofgem places a greater emphasis on outputs identified by stakeholders as priorities during stakeholder engagement.

An output incentive does not exist for all outputs. Where an incentive arrangement exists, the incentives may be asymmetric, that is, no reward for doing more and a penalty for doing less. Ofgem also applies a cap or collar to limit the extent it is appropriate for consumers to pay for more or less of an output relative to what was assumed when the price control was set.[64]

63 Ofgem, Handbook for implementing the RIIO model, 4 October 2010, p. 66.

64 Ofgem, Handbook for implementing the RIIO model, 4 October 2010, p. 76.

To facilitate the monitoring of outputs over the eight year regulatory period, Ofgem has extensive reporting requirements. It also specifies in detail how these outputs should be measured. It also uses scorecards that provide a summary of information such as performance relative to individual primary outputs.