Economic regulation of water utilities – research

IPART

30 June 2020

FINAL REPORT

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1. EXECUTIVE SUMMARY

The Independent Pricing and Regulatory Tribunal (IPART) engaged CEPA to provide it with information on other jurisdictions' current approaches to utility regulation. The information provided in this report will inform IPART's review of its approach to water utility regulation.[2]

We have provided case studies that cover the water and energy sectors from a range of jurisdictions, including Australia, Canada, and the UK. We researched the following jurisdictions:

- Essential Services Commission (ESC), Victoria – water.
- Essential Services Commission of South Australia (ESCOSA) – water.
- Ofwat, England and Wales – water.
- Water Industry Commission for Scotland (WICS) – water.
- Australian Energy Regulator (AER) and the Australian Energy Market Commission (AEMC) – energy.
- Ofgem, Great Britain – energy.
- Ontario Energy Board (OEB) – energy.

In addition, we considered the US Environmental Protection Agency's (EPA's) methodology for balancing the need to meet environmental targets for wastewater against the ability of customers to pay, and changes to this methodology recently proposed by industry stakeholders.

IPART set out a range of topics that it sought information on. Below we summarise the findings that we consider may be of most interest to IPART. Our detailed descriptions of each of the jurisdictions' approaches are set out in the appendices at the end of this report.

We have grouped the findings into broad themes that we have observed from the case studies. For all the regulators we considered, we note that elements of the framework are not mutually exclusive. For example, enhanced customer engagement requirements are set alongside incentives for the initial business plan to demonstrate comprehensive customer engagement.

Incorporating customer/ consumer preferences

All the regulators included in our case studies are requiring the regulated companies to undertake significant levels of customer engagement. These engagement levels are typically much greater and more sophisticated than the regulated companies were previously undertaking. These requirements have been introduced as part of the regulators' methods of ensuring that customer preferences are clearly incorporated in their price control decisions.

Our review indicates that the regulators have also tried to remove themselves from directly undertaking consumer engagement or supervising the engagement. Instead, most of the regulators have shifted to requiring companies to establish independent customer panels to assess their business plans and consumer engagement.[3] These panels are then required to report back to the regulator on the companies' engagement and how the outcomes of the engagement are reflected in the businesses' proposals. The intention of these approaches is also to ensure that companies take ownership of identifying and providing services that their customers value, rather than responding to regulatory direction. Broadly, two approaches are employed by the regulators in our case studies:

[2] Water utilities include those that undertake wastewater activities

[3] Ofgem and the AER also have sector wide expert customer challenge panels to assess the companies' proposals and customer engagement.

- Expert representatives that are established as customer forums that have a negotiation role, and the regulators have committed to giving explicit (and in one case binding) weight to the agreed positions reached between the forums and the companies. This approach is used/ being trialled by ESCOSA, WICS and the AER.
- Customer forums (or other forms of customer representation) that challenge the companies but are not required to set out whether they have reached an agreement or not. The ESC, Ofwat, Ofgem, and OEB are using this approach.

The decision between these two approaches appears to be, at least in part, dependent on the number of regulated companies. Regulators with multiple companies have not adopted the negotiated approach, although the AER's New Reg process is an exception with one company current trialling a negotiated approach.

It is difficult to give a view on whether requiring companies to undertake greater customer engagement necessarily leads to better outcomes than those obtained by a regulator that relies on input from customer advocates and its own consumer engagement. However, the shift to requiring companies to undertake greater and more wide-ranging customer engagement is a universal feature of the case studies. The approach does avoid a 'one-size fits all' outcome where the regulator regulates multiple companies, and undoubtedly it is likely to identify customer experience issues that the regulators may not have identified with its own consumer engagement. As most regulators are continuing to push greater customer involvement in the price control process, it is reasonable to assume that they consider customer outcomes are improved by these approaches. We consider that forcing companies to take ownership of their customers engagement and identifying services and service performance the customers value is a positive change. This is particularly the case where the regulators may be restricted in proposing alternative services/ options for the businesses to consider.

We also note that, at least in our case studies, greater customer engagement has not supplanted the application of building blocks.

Engagement with other stakeholders

In addition to elevating the role of customers and their representatives, some regulators have also pushed for other stakeholders – e.g. other regulators, governments, etc – to be more involved in the price review process. For example, ESCOSA has created a panel of regulators to discuss SA Water's pricing proposals and Ofwat requires that the environmental regulators engage with the businesses and their customer forums.

In our view, increasing the involvement and exposure of other stakeholders to the price control process has significant positives associated with it. While ensuring that other stakeholders' views are accounted for, these approaches may also improve transparency of the price review process and stakeholder buy in and ownership of the decisions reached. For example, environmental regulators see firsthand the trade-offs that companies need to consider in adopting the environmental targets set, the expenditure proposals associated with these proposals, and customers' views on these targets.

We have not identified any evaluation of the involvement of other stakeholders in the price control process, but we note that regulators have kept them involved in subsequent reviews.[4]

[4] Although, it is worth noting that Ofwat removed its explicit requirement that environmental regulators be involved in the customer forums. Ofwat however expected the businesses and their customer forums to continue to engage with the environmental regulators.

Services and service quality

Alongside the increasing levels of customer engagement, regulators have given more flexibility to companies to propose outputs and outcomes (i.e. services and service performance levels, and other outputs) that customers value. This has led to a broad range of outputs and output targets being adopted across the industries.

We consider that this flexibility is needed to ensure that customer engagement is effective. Regulators have required that companies provide evidence to support these outputs. This includes information on:

- customers' willingness-to-pay;
- customer impact assessments; and
- cost-benefit analysis.

However, while specific guidelines on what is required are provided, companies' quality of evidence has varied.

Common outputs and service targets are therefore still set and monitored by the regulators. The regulators have also been less likely to link financial incentives to performance targets which may be new, or for which the evidence is less robust.

Regulators still undertake an assessment of whether the proposed outputs are prudent and efficient, but are able to consider the companies' evidence on the prudency of the associated expenditure from their customer engagement.

While we consider that this flexibility to allow other outputs/ outcomes to be proposed, we note that the 'common' service outputs are still important. This is highlighted by Ofwat's process, where at the start of PR14 (Ofwat price review process that was completed in 2014) it was only proposing two common outputs, by the end of PR14 it had seven, and for PR19 it had 14. Regulators need to be careful that essential and well-defined outputs/ outcomes are not lost when greater flexibility to set outputs/ outcomes is provided to the companies.

Business plan incentives

Several regulators have been introducing additional incentives to improve the quality and ambition of the companies' proposals. The objective of these efforts is to ensure the companies 'put their best foot forward' from the outset rather than waiting for the regulator to respond to their initial proposals. These incentives, understandably, are focused on making sure that the evidence on what customers' value is front and centre of the business plans. The incentives are also intended to make sure the companies' plans incorporate tough efficiency challenges and incentivise the ongoing provision of services.

The mechanisms that have been put in place include financial, process, and reputational incentives:

- Ofgem, Ofwat, and the ESC have provided explicit monetary rewards to companies that have delivered good business plans. However, Ofgem has moved away from this approach for cases where it considers that there are an insufficient number of regulated companies to undertake a robust comparative assessment of the whole business plan. These regulators regulate sectors with double digit numbers of companies, the exception are the energy transmission and gas distribution sectors that Ofgem regulates.
- Regulators, for example Ofwat and the ESC, make a point of setting out, for stakeholders, which companies have provided good business plans and undertaken robust customer engagement.
- The ESC, Ofwat, WICS, and OEB all offer a proportionate (or risk-based) review, where the regulator considers the companies have submitted high quality proposals.
- ESCOSA and the AER may allow expedited reviews for parts of the companies' business plans that have been agreed with their Customer Forum.

The proportionate and expedited reviews all have reputational incentives associated with them.

So, have the adoption of innovative approaches to ensuring that business put their best foot forward and set out the services and performance customers value worked? It is difficult to give a definitive answer. Ofgem considered that

fast-tracking WPD during the RIIO-ED1 process (Ofgem's first electricity distribution price control under the Revenue = Incentives + Innovation + Outputs framework) led to benefits for all consumers that outweighed the gains to WPD. But for RIIO-2 it has removed fast-tracking for transmission and gas distribution companies because of a lack of comparators. Ofwat has continued using fast-tracking but has made some refinements to the level of upfront reward that it provides. It is too early to tell whether the ESC's process has been successful, and whether the negotiated/ proportionate reviews adopted by ESCOSA, the AER, and OEB will continue. However, the use of reputational incentives, early in the process, to publicise positive and/ or negative aspects of companies' business plans appears to be an effective and low cost approach, particularly when there is extensive customer engagement.

The reliance on comparative assessment for fast tracking and/or upfront financial rewards for good business plans indicates that these may not be appropriate approaches for IPART to consider.

Efficiency assessment and within period expenditure incentives

Where the regulators in our case studies cover multiple companies, they all attempt to undertake some form of benchmarking between the companies in order to determine a base level of efficient costs. Where there are fewer companies, regulators tend to rely on base-step-trends approaches for opex and bespoke assessments for capex.

We note that, WICS have stated that they are taking an Ethical Based Regulation approach which is intended to avoid an adversarial approach to estimating efficient costs. However, in our review of the WICS' documentation we did not identify how this worked in practice (i.e. it was not clear how efficient expenditure levels were determined for the proposed outcomes).

Specific outputs/ outcomes that the regulators do not consider to be part of 'base' expenditure are assessed on their own merits i.e. if the expenditure is justified by customer willingness-to-pay, has the company undertaken an assessment of the options and is their expenditure proposals at an efficient level.

Benchmarking almost certainly provides additional useful information on the efficiency of a regulated company compared to relying solely on the company's own expenditure. However, where the regulator has only one or a small number of companies benchmarking may not be viable. While inter-jurisdictional or international data can be used there are significant issues in ensuring that the data and the companies' outputs are comparable.

The application of within period expenditure incentive mechanisms is mixed:

- Ofgem and Ofwat apply a totex incentive mechanism, which sits alongside their totex assessment approach (we consider that a totex incentive mechanism can be applied to a bottom-up, e.g. operating expenditure (opex) and capital expenditure (capex) assessment, approach). They adopted this mechanism to equalise the incentives between capex and opex.
- The AER has separate incentive mechanisms for opex and capex but has tried to equalise these through setting approximately the same incentive rates for both.
- WICS effectively has a cap on over-/under-performance that Scottish water retains/ bears.

The other regulators – the ESC, ESCOSA and OEB – do not appear to have any specific mechanisms. Regulators have continued to tweak the sharing levels. For example, both Ofgem and Ofwat have reduced the amount of outperformance companies can retain for RIIO-2 and PR19 compared to their previous price controls.

In our view a totex incentive mechanism is a good approach to equalising incentives between opex and capex. The capitalisation rate, which allows 'opex' to be added to the regulated asset base (RAB), helps to remove any bias that might exist in favouring capex over opex as it would, to the extent the expenditure is prudent and efficient, maintain or grow the RAB (which is what attracted a certain type of investor). The level of the sharing factor depends on the regulator's view of the appropriate level of risk allocation between companies and customers.

Method for setting and regulating prices

Regulators in our case studies are using revenue caps or price caps. Several regulators (Ofgem, Ofwat, and the AER) moved to revenue caps, primarily with the aim of removing any disincentive for the regulated companies to

reduce demand. Where a revenue cap has been adopted, the regulators have retained significant control over the price setting process. This has been achieved by using approaches including:

- setting out principles, and methodology, that the companies must follow when they set their pricing structures;
- restricting the overall change in price levels (to avoid volatility); and
- approving the companies' methodologies and tariff statements.

All regulators undertake pricing impact assessments or require the companies to do so. This information is used to determine whether the changes are appropriate or whether adjustments are required to ensure that the right outcomes are delivered, and vulnerable customers are protected.

We could not find any evaluation the regulators have undertaken into whether the switch from a price cap to a revenue cap has achieved the stated objectives. However, none of the regulators in our case studies have switched back from a revenue cap to a price cap. In addition, the regulators operating revenue caps do not appear to have raised any issues with the use of rules, principles, and guidance to ensure that the companies set pricing structures in line with the objectives of the price control framework.

Environmental issue

In general, we found little evidence that economic regulators carry out detailed analysis of the environmental impact of their decisions. Although, both Ofgem and Ofwat included environmental issues in their impact assessments of their RIIO-2 and PR19 approaches, respectively. Their impact assessments broadly concluded that if they incorporated environmental policy into their framework, and if their framework allowed for environmental outputs to be considered, then their frameworks were appropriate.

In a similar vein, the economic regulators approaches have been to ensure that the companies have an efficient allowance to achieve environmental objectives that are typically set by environmental regulators or through government policy. However, as noted above, several regulators have pushed to have greater involvement of environmental regulators in the price control process.

We do note that the regulators in the UK appear more willing to accept additional environmental outcomes that are proposed by companies when these are supported by evidence of customers' willingness to pay. This, in part, may be because they see their role as being slightly broader (or consider they have freedom to do so) than regulators in other jurisdictions.

Innovation

All regulators we examined operate incentive-based regimes, but some have added additional mechanisms to encourage innovation. These are in addition to the underlying incentives for companies to outperform their expenditure allowances.

In order to offset a lack of innovation, there appears to be two broad approaches that regulators are using or considering:

- **Explicit funding.** Ofgem and Ofwat have created funds that are available for projects that would not otherwise occur under the price controls. These funds are to be awarded based on a 'competition' where the regulators and an independent panel assess whether the project is truly 'innovative'.[5] The AER has schemes, such as the Demand Management Innovation Allowance Mechanism (DMIAM), which provides funding for distributors to conduct research into innovative techniques for managing peak demand.

[5] Ofwat is still consulting on how its fund will function.

- **Regulatory/innovation 'sandbox'.** The OEB and the AER are moving forward with establishing innovation 'sandboxes'. These schemes have two major elements. Firstly, to provide a coordinated way of receiving advice about regulatory issues related to launching innovative products. Secondly, to waive or change rules temporarily if these are assessed to be a barrier.

In addition to introducing the innovation fund competition, Ofwat noted that it has a role to play in creating the right infrastructure and culture for innovation, and it has called on companies to develop a Joint Innovation Strategy to encourage further innovation in the sector.

We also note that some regulators consider that increased customer engagement may lead to the companies identifying innovations that they would not have otherwise identified or implemented.

A lot of these schemes are in their infancy (e.g. OEB's), or have yet to start (e.g. Ofwat's, AER's), and therefore it is difficult to assess their effectiveness. The fact that more regulators are introducing mechanisms to influence companies' behaviour around innovations indicates that they consider companies can do more.

Alternatives to 'building blocks'

Some regulators have considered alternative measures to traditional building blocks. These regulators have focused on increasing competition in parts of the companies' service area and/ or using external information to create quasi-competition environments.

Ofgem and Ofwat have both looked at introducing competition for large value discrete projects, rather than assuming that the incumbent monopoly provider needs to undertake the work. This is either through the regulator running a procurement process or forcing the company to run a competitive procurement process. The Australian Energy Market Operator (AEMO) can also run a competitive tender for transmission infrastructure in Victoria.

Both Ofwat's and Ofgem's approaches are largely based on the success of Ofgem's competitively appointed offshore transmission owner (OFTO) regime. CEPA's analysis for Ofgem (CEPA, 2016a), indicated that there had been significant benefits from the regime compared to a merchant or RAB type approach.[6] Although we note that changes in the cost of capital mean that Ofgem is not confident that its competition proxy model approach will lead to greater consumer benefits for current projects than funding projects under the RIIO RAB based approach.[7]

Ofwat also operates a New Appointments and Variations (NAVs) regime which provides a mechanism to facilitate new entry into the water and wastewater sector. Ofwat considers that there are significant benefits from new entry into the market and that the NAVs regime was important to route into the market. However, NAVs growth has remained limited and Ofwat is actively seeking to remove barriers that may block entry.

Concluding comments

There is a clear shift by all the regulators in our case studies to improve the level of customer engagement in the regulated businesses' planning process. The nature of the regulatory regimes has required other changes to support this. These changes include:

- giving the companies more flexibility to agree outputs/ outcomes with customers;
- establishing another 'check', and greater buy-in, of the business plans by involving customer representative forums and other stakeholders;

[6] CEPA (2016a), *Evaluation of OFTO Tender Round 2 and 3 benefits*, a report prepared for Ofgem, March.

[7] Ofgem (2020a), *Hinkley-Seabank: Updated decision on delivery model*, page 4.

- providing greater incentives to ensure that the first iteration of the business plans received by the regulators reflect the businesses' best endeavours to identify the services and services levels customers value, and their efficient costs for delivering these; and
- supporting innovation by providing funding and/ or resourcing for the companies to trial innovative approaches they would not otherwise undertake.

While some regulators consider that their approaches should lead to simpler regulatory price control processes, we have not observed a significant reduction in the complexity of the regimes. In fact, in some cases the requirements for greater customer engagement have led to more complex processes. However, there is a general perception that this leads to better customer outcomes and experiences.

2. INTRODUCTION

IPART is reviewing its approach to regulating water utilities. It is seeking to identify if any improvements can be made to its approach to ensure that it is operating in line with current best practice. IPART has engaged CEPA to provide a desktop review and evaluation of economic regulation in other jurisdictions to help inform its review of its own practices.[8]

2.1. CASE STUDIES

We agreed with IPART to provide case studies on the following jurisdictions as part of our desktop review:

- Essential Services Commission (ESC), Victoria – water.
- Essential Services Commission of South Australia (ESCOSA) – water.
- Ofwat, England and Wales – water.
- Water Industry Commission for Scotland (WICS) – water.
- Australian Energy Regulator (AER) and the Australian Energy Market Commission (AEMC) – energy.[9]
- Ofgem, Great Britain – energy.
- Ontario Energy Board (OEB) – energy.

Note, when we refer to 'water' we mean the water sector which includes wastewater. Not all water companies undertake wastewater activities.

Each of these jurisdictions apply incentive based regulatory regimes and have approaches that we consider are interesting and/ or unique for IPART to consider. We summarise each of these regimes below.

Table 2.1: Overview of each of the regulatory regimes

Regulator	Overview
ESC	The ESC determines revenue requirements for water businesses in Victoria, Australia. The ESC uses a under a building block approach, and the regulatory framework allows revenue caps, price caps, and hybrid approaches. For its 2018 price review of water businesses, the ESC launched a new incentive framework which links each regulated company's return on equity (RoE) to the outcomes it delivers to customers. The framework is known as PREMO, from the five areas against which the businesses are rated: • Performance – how the company performed in relation to the outcomes set out in its submission. • Risk – how risk is allocated to the party best positioned to manage it. • Engagement – the effectiveness of the company's customer engagement. • Management – the company's focus on efficiency and managing controllable costs. • Outcomes – whether the company is proposing an improvement, the status quo, or a withdrawal of service standards. All 19 water corporations that ESC are state owned.

[8] We carried out a similar review for IPART in 2009; CEPA (2009), *Review of IPART's approach to incentive based regulation*, October.

[9] We have focused on the electricity regime in this report.

Regulator	Overview
ESCOSA	ESCOSA regulates water and sewage companies in South Australia using two separate approaches. A regime for major retailers applies to SA Water which is regulated under a building block revenue cap approach, while minor and intermediate water retailers are regulated under a set of pricing principles. SA Water is a government-owned company while local councils and private companies operate minor and intermediate water retailers. A third-party access regime is in place which sets out a framework for third parties to negotiate access to specified water and sewage infrastructure operated by SA Water. We largely focus on the regime applied to SA Water in this report.
Ofwat	Ofwat regulates 16 privately-owned and one non-profit (Welsh Water) regional water monopolies in England and Wales (ten water and sewerage companies and seven water only companies). The basic regulatory regime is RPI-X where a revenue cap is set in real terms and adjusted by an inflation index. A building blocks model approach is used to set the revenue cap and in PR14 a totex approach with a notional ratio between opex and capex was introduced. The four key features of the regime are: regular price control reviews undertaken every five years, quality regulation with guaranteed standards, comparative competition where efficiency targets are set based on performance by other companies, and cost pass-throughs.
WICS	WICS sets price caps for a single regulated company, Scottish Water, using a building block approach. Charge caps are set every six years based on a revenue requirement calculated by summing allowed expenditure. Prices should deliver ministerial objectives for the water industry at the lowest reasonable overall cost. Scottish Water is a public sector body and monopoly provider of water services in Scotland except for the non-domestic retail market, which has been opened to competition.
AER/ AEMC	Within the National Electricity Market (NEM), responsibilities for the regulation of electricity networks are split between the AEMC and the AER. The AEMC is responsible for determining the National Electricity Rules (NER) and providing policy advice to ministers. The AER has responsibility for rules enforcement and the economic regulation of network service providers (NSPs). There are currently 13 distribution NSPs (DNSPs) and five transmission NSPs (TNSPs), with a mixture of public and private ownership, depending on the jurisdiction. The AER sets the annual revenue allowance that NSPs can recover from the provision of regulated services during the five–year regulatory control period. The revenue cap for each NSP is based on a standard post-tax building blocks model, overlaid with additional incentive adjustments. Recently, the AER has been exploring potential changes to the regulatory arrangements that would place more weight on direct negotiations between the NSPs and customer representatives.
Ofgem	Ofgem regulates the energy sector in Great Britain setting price controls for gas and electricity transmission and distribution operators. Ofgem introduced the RIIO (Revenue = Incentives + Innovation + Outputs) framework in 2010. The price control period for the upcoming RIIO-2 will run for five years, which is down from the eight-year period used in RIIO-1. All sectors are now regulated under a total revenue cap approach. However, actual returns vary based on companies' expenditure relative to Ofgem's base line and outputs delivered. The industry is made up of private companies with three transmission network operators, one gas transmission operator, 14 electricity distribution operators and eight gas distribution operators.
OEB	The OEB is the regulatory body for natural gas and electricity utilities in Ontario, Canada. The OEB acts as a quasi-judicial tribunal when approving rates for regulated utilities. All rate applications must pass the OEB's adjudication process before being implemented. Pricing regimes for the utilities include revenue caps, price caps and custom incentive rate-setting. There are 60 local distribution companies (LDCs). Most have regional monopolies, and most are owned by provincial and municipal governments, but some are private organisations. There is also an independent electricity system operator for transmission and three natural gas utilities which are regulated similarly to LDCs.

In addition, we considered the US Environmental Protection Agency's (EPA's) methodology for balancing the need to meet environmental targets for wastewater against the ability of customers to pay, and changes to this methodology recently proposed by industry stakeholders.

2.2. Methodology

IPART's terms of references set out that it was interested in an explanation and, where appropriate, for each jurisdiction, an evaluation of the following aspects of the regulators' methodology:

- Overall approach (e.g. revenue target, price cap, customer preference-driven).
- Method of determining and incorporating customer preferences.
- Method of assessing efficient costs of service provision, including approaches to addressing asymmetric information.
- Method of regulating or setting prices.
- Method of regulating service levels.
- Other controls on the use of market power by the provider.
- Method of incentivising efficient investment and level of service provision.
- Approach to addressing environmental impacts/issues.
- Assessment of customer impacts of price decisions.
- Assessment of financial impacts on the provider of price decisions.
- Institutional and statutory constraints on prices, terms and conditions of supply.
- How compliance is monitored and enforced.
- Measures to promote alternatives or complements to economic regulation, such as various forms of competition.
- Measuring success.

In addition, during discussions, IPART highlighted several specific areas of the regulatory approaches that it considered were important for us to cover in the case studies. These were:

- The regulators' approaches to setting prices. This includes the pricing principles and methodology used. IPART also wanted to understand what principles regulators have used with a price cap or revenue cap in place.
- The regulators' approaches to ensure that their decisions, and the companies' proposals, reflect services and prices that customers want.
    - What analysis (e.g. cost-benefit analysis) and information gathering do regulators engage in?
    - Are there incentive mechanisms used to support this?
    - Where do customers sit in this process?
- Regulatory arrangements and/ or incentive mechanisms which encourage regulated companies to put their 'best foot' forward in their initial proposals.
- Arrangements to encourage regulated companies to innovate.

- Regulatory arrangements and/ or incentive mechanisms which encourage regulated companies to consider outcomes as a whole, rather than focusing on individual inputs/ outputs. In other words, how to encourage companies not to cherry pick individual elements of the regulator's decision that they may not agree with?
- How stakeholders are engaged in the price control setting process.
- How environmental, climate change, liveability, and cost issues are balanced.
- Lessons from the evolution of regulatory approaches i.e. identify what did not work for regulators.

To cover the above requirements and provide information on other aspects of the regimes, we developed the following case study template.

Table 2.2: Case study template

Topic	Questions we sought to answer
Overview	• What are the high-level features of the regulatory arrangements? • What is the aim of the regulation?
Regime type	• Type of regulatory regime (e.g. revenue cap, price cap, hybrids)? • Building block, rate of return, information disclosure?
Industry structure	• Structure of the regulated sector, including for example the ownership structure of utilities (e.g. government owned, privately owned) and the number of participants.
Price control process	• What are the main stages of the price control process? • Is there a process, such as fast tracking, to 'reward' good business plans?
Role of customers and other stakeholders	• What are the methods of determining and incorporating customer preferences into the price control? • How do utilities conduct customer engagement and incorporate customer preferences in their proposals? • How are other stakeholders engaged?
Pricing	• What are the principles for setting prices for regulated services? • How is the impact of price decisions on customers measured?
Approach to assessing efficient and prudent expenditure	• How is capex, opex, and (where applicable) totex assessed? • Are there incentive mechanisms associated with driving and revealing efficiencies (including how the financial incentives are set)? What is the degree of cost/risk sharing between the company and customers?
Services and performance	• What services are regulated? • How are service levels/ performance targets to be achieved by regulated companies set (including if CBA is used to set them), i.e. how are outputs and outcomes determined? • What are the incentive mechanisms around service and performance levels? • How is service levels and/ or performance monitored?
Competition	• Is competition allowed/ promoted in certain elements of the value chain? How? • In addition to competition, are there other alternatives to economic regulation to promote the regulator's objectives and to limit the market power of natural monopolies?
Other incentive mechanisms	• How does the regulator encourage/ allow for innovation? • Are there other incentive mechanisms in place?
Protecting the environment	• How are environmental considerations incorporated into the regulatory regime?

Topic	Questions we sought to answer
	• What environmental considerations and longer-term strategies (e.g. integrated water cycle management, drought response, water recycling) are within the regulator's remit?
Vulnerable customers	• Are there provisions in the regulatory system to support vulnerable customers?
Maintaining economic and financial sustainability	• How is the impact of price decisions on the economic and financial sustainability of the regulated utility assessed? • What happens if in the middle of the price control period there are shocks that put the economic or financial sustainability of the regulated firm at risk?
Any other relevant points	• Are there other methods/ issues that IPART may find useful?
How does the regulator measure success?	• Does the regulator specify 'success' criteria? • Does the regulator review its performance/ the impact of the regime?

3. FINDINGS

Our detailed case studies are set out in the appendices. In this section, we have summarised our findings that we believe may be of most interest to IPART. However, we note that further information for each of the regimes is summarised in the appendices.

We have focused on identifying aspects of the regulatory regimes that IPART may want to consider as part of its review. We assume that the selected regulators have implemented their approaches following good practice principles similar to IPART's, therefore we have focused on identifying consistent themes across the regimes that may indicate common best practices.

We have attempted to provide a qualitative review of the efficacy of the approaches adopted and what might be appropriate for IPART to consider. However, we have reviewed existing practice, which includes price controls that have only just begun or have yet to begin, therefore in some cases there is no information on the success or otherwise of the approach adopted.

We have grouped the findings on the basis of themes that we have observed from the case studies and how these relate to IPART's requirements:

- **Incorporating customers/ customer preferences.** The methods adopted by regulators in the case studies have broad ranging impacts across a range of issues including setting service levels; assessing environmental outcomes; addressing asymmetric information; and encouraging innovation.
- **Engagement with other stakeholders.** Some regulators have changed how they engage with, or require companies to engage with, other stakeholders such as environmental regulators. This can impact on the services and service levels, as well as environmental issues.
- **Services and service quality.** This covers how the services and service levels are being set. This focuses on how regulators are attempting to broaden the range of outcomes to include others that consumers value.
- **Business plan incentives.** This covers the approaches regulators have been adopting to help remove asymmetric information concerns, to ensure that companies deliver initial proposals that reflect the outcomes customers value and pose sufficiently challenging efficiency targets.
- **Efficiency assessment and within period expenditure incentives.** This covers the regulators current approaches to these issues.
- **Method for setting and regulating prices.** This covers the form of price control (e.g. revenue cap or price cap), the reasons for observed changes in approaches, and how regulators retain control of pricing decisions under revenue caps.
- **Environmental issues.** This covers regulators' approaches to dealing/ incorporating environmental issues into their framework and decision making process. This sits alongside the increased engagement of other stakeholders.
- **Innovation.** All the regulators in our case studies have incentive based regimes. However, some have concerns that the inherent incentives are insufficient to encourage innovation in areas beyond pure expenditure reductions, or where material investment is required on a risky project.
- **Alternatives to building blocks.** Regulators are exploring ways to traditional building blocks regulation. This includes increasing competition, introducing competitive procurement, or creating proxy competition.

We discuss these in turn below. In each sub-section, we first set out our analysis of the case studies and then provide the specific detail for each case study.

3.1. INCORPORATING CUSTOMER/ CONSUMER PREFERENCES[10]

All the regulators included in our case studies are requiring the companies they regulate to undertake significant levels of customer engagement. These engagement levels are typically much greater and more sophisticated than the regulated companies were previously undertaking. This requirement has been introduced as part of the regulators' methods of ensuring that customer preferences are clearly incorporated in their price control decisions.

Our review indicates that the regulators have also tried to remove themselves from directly undertaking consumer engagement or supervising the engagement. Instead, most of the regulators have shifted to requiring companies to establish independent customer panels to assess their business plans and consumer engagement. These panels are then required to report back to the regulator on company's engagement and how the outcomes of the engagement are reflected in the businesses' proposals. The intention of these approaches is also to ensure that companies take ownership of identifying and providing services that their customers value, rather than responding to regulatory direction.

Broadly, two approaches are employed by regulators in our case studies to customer: i) Expert representatives that are established as customer forums that have a negotiation role, and the regulators have committed to giving explicit (and in one case binding) weight to the agreed positions reached between the forums and the companies; ii) customer forums (or other forms of customer representation) that challenge the companies, but are not required to set out whether they have reached an agreement or not. The decision between these two approaches appears to be, at least in part, dependent on the number of regulated companies. Regulators with multiple companies have not adopted the negotiated approach, although the AER's New Reg process is an exception with one company current trialling a negotiated approach.

It is difficult to give a view on whether requiring companies to undertake greater customer engagement necessarily leads to better outcomes than those obtained by a regulator that relies on input from customer advocates and its own consumer engagement. However, the shift to requiring companies to undertake greater and more wide-ranging customer engagement is a universal feature of the case studies. The approach does avoid a 'one-size fits all' outcome where the regulator regulates multiple companies, and undoubtedly it is likely to identify customer experience issues that the regulators may not have identified with its own consumer engagement. As most regulators are continuing to push greater customer involvement in the price control process, it is reasonable to assume that they consider customer outcomes are improved by these approaches.

We consider that forcing companies to take ownership of their customers engagement and identifying services and service performance the customers value is a positive change. This is particularly the case where the regulators may be restricted in proposing alternative services/ options for the businesses to consider.

Over the last 10 to 15 years, regulators have increasingly supported regulated companies engaging with customers to determine the services and service levels that they value.[11] Previously, most regulators used a combination of:

- their own form of customer engagement;
- relied on customers' and their advocates' submissions on the companies' business plans and their decisions; and/ or
- relied on their own assessment of what customers value.

The exception to this is perhaps the OEB's approach which has relied on customer inputs through a courtroom style adjudicated process since the regime's inception. However, the OEB also introduced a Customer Engagement Framework in 2016 to increase customers' engagement in the rate setting process.

[10] Note, we recognise that there are differences between customers and consumers, however we effectively use these terms interchangeably in this section and throughout the document.

[11] Our analysis is focused on the regulators' specific implementations of customer engagement as consumer advocates and represented groups are also involved under all approaches.

As discussed in the next sub-section, regulators use financial, process, and reputational incentives to encourage companies to demonstrate that they have conducted effective and robust consumer engagement and that the outcomes from this are clearly incorporated into their business plans.

The regulators' approaches to incorporating customer preferences impact many parts of their overall economic regulatory framework, including:

- setting prices;
- service levels;
- assessment of customer impacts; and
- incentivising efficient investment and levels of service provision.

We have observed some common themes emerging:

- **Companies must design and conduct their own customer engagement.** Regulators have put the onus on the companies to design and implement their customer engagement. However, some regulators have required that the companies establish Customer/ Consumer Panels that provide an independent review of the companies' engagement processes and business plans. While these panels are 'independent' of the companies, they also work with the companies on their business plans and customer engagement approaches.
- **Stronger financial and reputational incentives.** All the regulators have established financial and/ or reputational incentives to encourage good consumer engagement. Reputational incentives include publishing details on the regulators' views on the form of engagement, so that consumers and other stakeholders can scrutinise the companies' approach. Ofgem has gone beyond only applying a financial incentive on the initial business plan by introducing an ongoing customer engagement financial (and reputational) incentive mechanism that it applies on an annual basis.
- **Some regulators have put in place expert customer panels to support their decision-making process.** Some regulators have engaged their own experts to provide a further 'independent' review of the engagement. For example, Ofgem uses a Customer Challenge Panel in addition to requiring the companies to have their own Customer Engagement Groups/ User Groups. The AER has a similar process in place. However, we note that Ofwat has moved away from having a sector wide Consumer Advisory Panel for PR19, instead it considers that relying on each companies' Consumer Challenge Groups is more appropriate.
- **Negotiated positions (between customer representatives and companies) are being used/ explored**. Some regulators have moved towards a 'negotiated settlement' approach for certain aspects of the price control. This requires the companies to negotiate positions on issues with specifically selected Consumer/ Customer Forums. In some cases, the regulators have committed to accepting positions that are agreed by both parties. The regulator provides technical advice on the efficient levels of expenditure and other issues are 'off the table' (such as the rate of return). WICS uses this approach with Scottish Water, which is a state-owned company, and ESCOSA is also used this approach with SA Water, another state-owned company. The AER is currently trialling negotiated positions with a privately owned company. We note that only WICS has a binding commitment to accept the negotiated positions.

Broadly, two approaches appear to have formed with regard to:

- consumer/customer groups that engage with the company on customer engagement and outcomes, but do not 'negotiate' outcomes; and
- expert representatives (who represent customer preferences) who are supported by the regulator and 'negotiate' outcomes with the company on behalf of its customers.

In both approaches, the regulators have put the onus on companies to design and conduct their own consumer engagement. OEB's approach is different as it does not require a customer panel to be formed, and customers can be directly involved through presentations to the Board at its courtroom style hearings.

A key decision variable when a regulator is selecting its approach appears to be the number of companies that the regulator regulates. WICS and ESCOSA are only regulating one company and in both cases the company is state-owned. The AER is an exception as it regulates multiple companies.[12]

There could be a number of reasons for this:

- It may be due to the level of resourcing a regulator needs to commit to support the negotiating parties. In the case studies, the regulators have been heavily involved in the negotiation process, if not the negotiations themselves, to make sure the parties are keeping to topics that are in their remit and acting in line with statutory requirements. (We note that the regulator's engagement during the negotiation process may save it time and resources later in the price control process.)
- It also may be due to regulators seeking to retain oversight and control of the decision making process, for example, the regulator faces a reputational risk if the parties reached a position that the regulator did not consider was in the long-term interest of consumers.[13] And linked to this, it also may be that the regulator considers its statutory duties prevent it from delegating any decisions about the services and prices.

We also note, the fact that WICS and ESCOSA regulate state-owned companies may affect the effectiveness, or the regulators perception of the effectiveness, of a negotiated approach. With regard to the former, the Scottish Government has significant involvement in the price control process. Evidence from the AER's New Reg approach, when completed, may indicate how successful this approach is for privately owned companies.

Given the limited evidence available at this stage it is difficult to say whether a formal negotiated approach between customer representatives and the regulated business leads to better regulatory outcomes compared to the alternative. WICS is the only regulator into its second price control approach since introducing negotiated settlements (i.e. the AER and ESCOSA have not evaluated their approaches yet). Other regulators, e.g. Ofgem and Ofwat, that have required customer forums to be established, but not given them official 'negotiating' roles, have continued with this approach.

It is clear that both approaches lead to a significant increase in the level of consumer/ customer engagement required by regulators, as the companies are still expected to undertake their own consumer engagement. Incorporating customer perspectives from multiple sources may have a range of implications that are yet to be fully appreciated. For example, in the AER's New Reg trial, it remains to be seen how the regulator will balance inputs from different customer representatives in its overall determination.[14] It could be the case that different types of customer engagement approaches are suited to providing particular types of insights (for example, on customer experience at each company), in which case adopting multiple approaches to engaging customers could provide complementary evidence.

The drive to incorporate more customer preferences into business planning appears to arise from several concerns, including that the existing CPI-X incentive based approach was complex, regulated companies were able to game the system, and that the service provided by the regulated companies may not be in line with customers'

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13 See Heims, E., and Lodge, M., (2016), *Innovation through customer engagement and negotiated settlements in water regulation: Towards a transformed regulatory state?*, CARR discussion paper 83.

14 CEPA (2020), *New Reg: AusNet Services Trial Insights Report 3 - Conclusion of the Early Engagement Process*, May, page 12.

expectations.[15] For example, Ofwat saw an increased focus on customer engagement as a way for companies to take greater ownership of plans, innovating and focusing on consumers.[16]

While changes have been made to the building blocks approach alongside customer engagement (e.g. Ofgem's and Ofwat's move to a total expenditure (totex) assessment and incentive approach) the increase in customer engagement in and of itself has not led to a shift away from a building blocks approach. Regulators have highlighted the importance of effective outputs for the building block approach and robust evidence from customer engagement can expedite the assessment process and lead to better consumer outcomes overall.

There are challenges that arise from the introduction of customer driven outputs. In some cases, the customer preferences revealed during engagement processes may challenge aspects of the existing regulatory framework. For example, in the AER's New Reg trial, agreement between the regulated company and the customer forum on establishing a new incentive scheme has required the regulator to launch a wider consultation process in order to implement it.[17]

It is also important to acknowledge the potential limitations of relying on customer engagement. For example, a key issue is how well the responses/ answers from customer engagement represents the long-term interests of consumers. Another question is whether current customers are able to adequately consider the trade-off between current prices/ services and the prices/ services that future customers will receive (for example, if short-term price reductions lead to higher costs in the long run). For example, recent research commissioned by the Consumer Council for Water (CCW) noted that most participants in companies' customer engagement struggled with some elements of what they were asked to comment on, and in some cases would have preferred 'experts' to be consulted on their behalf.[18]

We also note that Ofgem's own consumer engagement for DPCR5 (its price control review completed in 2009) led to the introduction of new service performance measures for customers that remained in place for the subsequent RIIO-1 determinations. Ofwat has also reverted to having a base set of performance metrics to aid comparability across the sector and ensure that a base level of outcomes are provided.

We summarise each of the regulators' approaches in turn below.

3.1.1. ESC

The ESC is not prescriptive on how the companies should undertake customer engagement. Instead the onus is placed on companies to identify the best way to engage with their customers. The ESC has set out principles that it uses to assess customer engagement:

1. the form of engagement should be tailored to its content and circumstances;
2. customers should receive appropriate information;
3. engagement should prioritise issues that have a material impact on services and prices;
4. engagement should start early and be ongoing; and
5. the company should demonstrate in its submission how it has taken customers' views into account.

[15] Heims and Lodge (2016).

[16] Ofwat (2013), *Setting price controls for 2015-20 – final methodology and expectations for companies' business plans*, July, page 170.

[17] AER (2019), *Explanatory statement – Draft Customer Service Incentive Scheme*, December.

[18] Blue Marble Research (2020), *Engaging water customers for better consumer and business outcomes*, a report for CCW, April.

As noted in the previous section, engagement is one part of the PREMO incentive and companies cannot receive a high rating from the ESC unless they perform well on customer engagement.

3.1.2. ESCOSA

ESCOSA has encouraged SA Water to carry out its own customer engagement, while ESCOSA itself has formed a Customer Negotiating Committee (CNC) which has the objective of representing all SA Water's customers and challenging and negotiating SA Water's business plan. The CNC is comprised of an Independent Chairperson, a member of the Consumer Experts Panel and a member of SA Water's Customer Working Group. SA Water formed a Customer Working Group to engage with to test and analyse results from surveys it undertakes.

ESCOSA is also supported by a Consumer Experts Panel (CEP), which is made up of consumer advocates, industry groups and governmental groups. The purpose of the CEP is to allow members to identify and raise the issues that are important to the customers they represent.

3.1.3. Ofwat

Ofwat requires that companies conduct their own customer engagement processes. Ofwat is not prescriptive on the approach but requires that the companies use customer engagement to justify their business plans, including evidence of willingness-to-pay (WTP) and customer data (such as complaints). Ofwat also requires that companies establish independent CCGs that provide both a challenge to companies and independent assurance to Ofwat on the quality of the company's customer engagement and the degree to which this is reflected in the company's business plan.

Ofwat also requires that the companies provide a Board assurance statement. A requirement of the assurance statement is that it details that customer engagement and feedback from the CCG has been incorporated into the business plan. The CCGs' could also make representations directly to Ofwat in their reports.[19]

- Ofwat set out that compared to PR14, it intended to inform, enable, and incentivise improved customer engagement:
- facilitate more CCG collaboration; and
- continue to provide information and clarity about our expectations (but not provide detailed or prescriptive guidance on how companies should engage with their customers).

Ofwat worked with the CCG chairs to ensure clarity on what Ofwat expected the CCG reports to include.[20] This is likely to have been a result of concerns raised in PR14 that Ofwat had disregarded a number of CCG's views.[21]

For PR14, Ofwat also had in place a Customer Advisory Panel (CAP) which provided it with sector wide advice. The CAP was made up of consumer group representatives, business organisations, and large customers. Ofwat did not use a CAP for PR19 on the basis that it found it difficult to reconcile its PR14 timeframes with CAP meetings. It also noted that it wanted to be challenged by the companies' customers on its methodology and its implementation.

3.1.4. WICS

Scottish Water conducts customer research and it can work with the Customer Forum, which was established to challenge and negotiate Scottish Water's business plan, to coordinate research. The Forum consists of a Chair and nine members from different professional backgrounds, such as the water industry, consumer affairs, environmental affairs, public policy, business, and academia, selected for their breadth of expertise. The Forum is not meant as a

[19] Ofwat (202), *PR19 final determinations – Delivering outcomes for customers policy appendix*, April.

[20] Ofwat (2017a), page 25.

[21] Heims and Ldoge (2016), page 14.

representative body of customer types and is expected to devote time and resources to establishing what customer priorities are and, based on these insights, ensure that Scottish Water's business plan reflects customer interests. However, both Scottish Water and the Customer Forum can undertake their own customer research.

WICS has committed to accepting the agreed aspects of Scottish Water's business plan.

3.1.5. AER

The AER published guidelines on its expectations of companies' consumer engagement. The AER expects companies to demonstrate how they have engaged with consumers and how they have sought to address consumers concerns. The AER set out best practices principles it expects the companies to adhere to: clear, accurate and timely communication; accessible and inclusive; transparent; and measurable. Aside from this, it is up to the companies to determine their consumer engagement strategy.

In 2018 the AER, in conjunction with Energy Consumers Australia (ECA) and Energy Networks Australia launched a trial of a new process 'New Reg'. AusNet Services volunteered to trial the process. The approach is modelled on the WICS negotiated settlement approach. A Customer Forum is charged with negotiating certain aspects of AusNet Services' business plan. AusNet Services noted that the Customer Forum's "*members were selected for their diverse and complementary skills and experience; their ability to credibly represent the perspectives of customers; their understanding of consumer issues; and their analytical ability.*"[22]

A key difference with the WICS approach is that the AER has not committed to accept any of the negotiating positions in advance, although it has indicated these agreements may help expedite the assessment process.

3.1.6. Ofgem

Ofgem encourages companies to be proactive in engaging with customers. Ofgem has provided little guidance of what the customer engagement should be, however it has required the companies to establish Customer Engagement Groups/ User Groups. These groups are made up of a mix of customers, consumers, and experts and are expected to challenge the companies on their customer engagement and business plans. Ofgem has chosen to have separate groups for each of the companies in order to allow for regional differences to be picked up.

Ofgem also has an explicit incentive around stakeholder engagement – the Stakeholder Engagement Incentive (SEI). The companies' engagement is assessed by a panel with financial rewards provided to those that perform well.

3.1.7. OEB

OEB holds customer engagement events, including community meetings, public hearings and consumer panels, whenever a utility wishes to change their delivery rates, alter their ownership or undergo a large infrastructure project. These events are either done face-to-face and/ or via written consultations. OEB reviews input from consumers and other interest groups before making decisions on each application.

In addition to consumer engagement events, the Consumer Engagement Framework includes an enhanced consumer website; regional consumer representatives, and a dedicated OEB contact person. Previously, consumer participation tools were local newspaper notices, web postings, letters of comment and interventions on behalf of consumers.

Consumer feedback from the Consumer Engagement Framework process is a key elements of the approval process for utility applications. For example, the Decision and Rate Order for an Erie Thames Powerlines Corporation (ETPL) application for electricity distribution rates explicitly summarises customer concerns and follow-

[22] https://www.ausnetservices.com.au/en/Misc-Pages/Links/About-Us/Charges-and-revenues/Electricity-distribution-network/Customer-Forum, accessed 20 May 2020.

up processes that the utility took to mitigate the concerns. Additionally, utilities are required to conduct customer engagement via customer surveys as part of the annual performance scorecard process.

3.2. ENGAGEMENT WITH OTHER STAKEHOLDERS

In addition to elevating the role of customers and their representatives, some regulators have also pushed for other stakeholders – e.g. other regulators, governments, etc – to be more involved in the price review process.

In our view, increasing the involvement and exposure of other stakeholders to the price control process has significant positives associated with it. While ensuring that other stakeholders' views are accounted for, these approaches may also improve transparency of the price review process and stakeholder buy in and ownership of the decisions reached. For example, environmental regulators see firsthand the trade-offs that companies need to consider in adopting the environmental targets set, the expenditure proposals associated with these proposals, and customers' views on these targets.

We have not identified any evaluation of the involvement of other stakeholders in the price control process, but we note that regulators have kept them involved in subsequent reviews. Although we note that Ofwat removed its explicit requirement that they be involved in the customer forums.

In addition to customers and their representatives, some regulators have also pushed for other stakeholders to be more involved in the price review process. This includes environmental and water quality regulators, government bodies, and industry associations. This is particularly important to ensure that environmental issues are adequately dealt with (this is discussed in more detail in Section 3.7).

Unlike customers, who are mainly engaged by the regulated companies to inform their business plans, these stakeholders may be engaged directly by the economic regulator and/or with the regulated company. The scope and timing of their involvement can vary considerably across jurisdictions.

Overall, economic regulation in all the jurisdictions we have examined includes some form of stakeholder engagement:

- Stakeholders can be involved in preliminary consultations on regulatory reform (e.g. ESC's consultation in the lead-up to PREMO) or on the regulator's approach to specific aspects of the price control methodology (e.g. Ofwat's workshops, AER's framework and approach engagement). A particularly strong example of this is Scotland, where WICS and other stakeholders have co-designed features of the regulatory framework and of the price control.
- In some cases (e.g. ESCOSA and Ofwat), government departments and other regulators are engaged during the price control to advise economic regulators and customer panels on the regulated companies' compliance with statutory requirements. In PR14, Ofwat required that the CCGs' also included members from CCW, one of Environment Agency, Natural Resources Wales, and Natural England and from the Drinking Water Inspectorate (DWI).[23] For PR19, the environmental and drinking water regulators were not part of the CCGs, but were expected to play a significant role informing the CCG discussions.[24]
- Stakeholders may be invited to present evidence at public hearings, such as those conducted by Ofgem and the OEB's adjudications, to inform the regulator's decisions, or to make written submissions on the regulator's initial positions (e.g. AER).

The involvement of other regulatory bodies in price control reviews are not necessarily new, however the push some regulators have made is to ensure that there is an explicit and obvious level of involvement. The changes, while designed to increase stakeholder engagement, also improve transparency of the price review process and

[23] Ofwat (2014a), *Consumer challenge groups*.

[24] Ofwat (2015a), *Ofwat's customer engagement policy statement and expectations for PR19*, May, page 4.

stakeholder buy in and ownership of the decisions reached. For example, environmental regulators see firsthand the trade-off that companies need to consider in adopting the environmental targets set and the customers views on these.

We consider that increasing the involvement of other regulators and other stakeholders in the price control process is a positive. In particular, we believe there is a benefit from increasing other stakeholders' visibility of the costs and trade-off associated with the regulated companies account for environmental issues in their investment decisions.

We summarise each of the regulators' approaches in turn below.

3.2.1. ESC

The ESC sought stakeholder input for its review of regulatory arrangements in the Victorian water sector, which eventually led to the introduction of the PREMO framework.

In 2018, the ESC has adopted a formal stakeholder engagement framework (covering all sectors regulated by the ESC). The framework includes principles of good stakeholder engagement (e.g. transparency, clarity, and inclusiveness) as well as indicative processes and timeframes for engagement conducted as part of a price review and other regulatory determinations.

Stakeholder engagement to inform business plans is largely left to individual companies, although the focus of engagement in the PREMO framework is largely on customers. However, the ESC expects that water businesses consult with stakeholders when preparing their demand forecasts. For example, councils, regional planning bodies and land developers should be consulted about anticipated housing and other growth.

3.2.2. ESCOSA

Since the 2016-2020 price control, ESCOSA has sought to improve coordination between the state's technical, safety, environmental and public health regulators, and government departments. ESCOSA requested public submissions from other regulators on the extent to which SA Water's 2016 Regulatory Business Proposal reflected their requirements and held quarterly meetings with the other regulators to discuss emerging issues.

A Regulator's Working Group was established to facilitate coordination throughout the 2020-2024 regulatory period. The Working Group is chaired by ESCOSA and includes the Environment Protection Authority, SA Health, the Office of the Technical Regulator, and the Department of Environment and Water. SA Water was asked to brief the Working Group on various aspects of its performance and future plans.

The Working Group's involvement in the price control process includes:

- Clearly communicating any minimum service standards or requirements to SA Water and the Negotiation Forum.
- Supporting ESCOSA's assessment of SA Water's external responsibility investment, i.e. expenditure proposed by SA Water to meet its legal and regulatory responsibilities.
- Informing the Customer Negotiation Committee as it negotiates with SA Water on its proposed business plan in 2020.
- Monitoring, evaluating, and reporting on SA Water's operations and service delivery outcomes throughout the 2020-2024 regulatory period.

Stakeholder engagement is among ESCOSA's indicators of its own success.

3.2.3. Ofwat

Ofwat held a number of stakeholder consultations to help define its PR19 methodology, including:

- Two workshops to test Ofwat's early thinking on outcomes (including the use of common performance commitments, comparative assessments, and asset health).

- A discussion on the common metrics that Ofwat uses to assess affordability and vulnerability.
- Working groups to pilot the customer measure of experience (C-MeX) and developer services measure of experience (D-MeX); two metrics providing the basis for financial incentives in PR19.
- Working with companies and other stakeholders to finalise consistent definitions for common performance commitments where a definition was not yet complete, including through a joint Ofwat-Water UK project on seven commitments.

Ofwat indicated that environmental and quality regulators would need to consider whether companies are at risk of breaking their statutory obligations and communicate their concerns to both the companies and the CCGs, in order to allow companies to address such issues before an intervention from Ofwat is required.

Key stakeholders (including the Consumer Council for Water, the Environment Agency, Natural Resources Wales, the Drinking Water Inspectorate, Natural England and the CCGs) are assigned senior Ofwat staff as dedicated leads.

3.2.4. WICS

The Scottish Government, Citizen Advice Scotland (CAS), the Scottish Environment Protection Agency (SEPA, Scotland's environmental regulator), and the Drinking Water Quality Regulator for Scotland (DWQR) are involved at various stages of the price control process.

- The Scottish Ministers set out high level pricing principles and investment objectives that act as guidelines for WICS's decision papers and the negotiations between Scottish Water and the Customer Forum. The Ministers draft the pricing principles in consultation with WICS, SEPA, DWQR, and CAS.
- The Scottish Government, SEPA, DWQR, and CAS also meet with WICS to discuss key issues for the price control and longer-term prospects for the water sector.
- Customer engagement used to inform Scottish Water's business plans is co-commissioned by the company, the Customer Forum, WICS, SEPA, DWQR, and CAS.

More broadly, these stakeholders have contributed to shaping the regulatory framework. The Customer Forum, for example, was formed following an agreement between WICS, Scottish Water, and Consumer Focus Scotland (now CAS). The Investment Planning and Prioritisation Framework (IPPF), introduced in SRC21 to guide the development of Scottish Water's capex program, was co-created by Scottish Water, the Scottish Government, the Customer Forum, CAS, DWQR and SEPA. The IPPF is characterised by regular interaction between Scottish Water and stakeholders to identify and prioritise the company's investment needs.

3.2.5. AER

The AER undertakes early stakeholder engagement to set a framework and approach (F&A) for its regulatory review. Among other things, the F&A determines which distribution services the AER will regulate, the pricing mechanism for regulated distribution services and the incentive schemes that will apply to both TNSPs and DNSPs.

During the price control process, the AER seeks to facilitate stakeholder participation by publishing issues papers that set out its preliminary views on the NSPs' proposals. The issues paper is intended to assist stakeholders who wish to make a submission. The AER then publishes a draft determination, taking stakeholder views into account. Stakeholders are also able to make submissions on the draft determination.

There is also an established process for stakeholders, including consumers, government, and industry participants, to propose changes to the energy rules for the AEMC's consideration.

3.2.6. Ofgem

The RIIO-2 framework introduces requirements and opportunities for stakeholder engagement:

- Ofgem has stated that it will hold open public hearings to focus on areas of disagreement or contention. Stakeholders will be invited to provide evidence in support of or against companies' business plans.
- Ofgem also expects the companies' business plans to set out how the companies will maintain a process of high-quality engagement with stakeholders on an ongoing basis.

Ofgem engaged with stakeholders throughout the development of its sector specific methodologies. This was done via workshops and consultation documents.

3.2.7. OEB

In addition to customers, other stakeholders can intervene in the OEB's rate-setting process. Intervenors can submit written questions, cross-examine the utility and other witnesses at oral hearings, file evidence, and make written or oral arguments.

The OEB requires frequent intervenors to annually file information on their mandate, membership, and constituency to help the OEB and other parties assess the basis for the intervenor's interest in a particular proceeding. Frequent intervenors include energy producers, consumer groups, environment advocates, and landlords associations.

3.3. SERVICES AND SERVICE QUALITY

In this section, we consider methods adopted to set and regulate service levels. Alongside the increasing levels of customer engagement, regulators have given more flexibility to companies to propose outputs and outcomes (i.e. services and service performance levels, and other outputs) that customers value. This has led to a broad range of outputs and output targets being adopted across the industries.

Regulators have required that companies provide evidence to support these outputs. This includes information on: (i) customers' willingness-to-pay; (ii) customer impact assessments; and (iii) cost-benefit analysis. However, while there is specific guidelines on what is required, companies' quality of evidence has varied.

Common outputs and service targets are therefore still set and monitored by the regulators. The regulators have also been less likely to link financial incentives to performance targets which may be new, or for which the evidence is less robust.

Regulators still undertake an assessment of whether the proposed outputs are prudent and efficient, but with the evidence from the companies on the prudency of the associated expenditure.

The expanded role for companies' customer engagement within price reviews has been accompanied with regulators' providing more flexibility for companies to propose services and service performance levels.

While 'outputs' and 'outcomes' are certainly not new regulatory terms, they appear to have increased in prominence in the regulatory vernacular in the UK and have begun to be more prominent in Australian regulation. This appears to be a result of the focus on customer engagement in the price control process. Regulators generally use these terms in a similar fashion; outcomes are things that customers and society value, while outputs are things that companies deliver to achieve those outcomes. In practice as outputs are more measurable they tend to be the focus point for determining the services and service quality that customers receive. Outputs can also relate to specific deliverables that the company can demonstrate customers' value, such as improvements in environmental conditions.

The key themes that we observed are:

- **Outcomes focused.** Linked to consumer engagement, regulators require that companies demonstrate how the activities they undertake deliver the outcomes that customers value. This shift in theory is to put the onus on companies to set out customers' preferences and valuation of services and service performance levels.
- **Companies have greater flexibility to propose outputs.** The shift to outcomes focused regimes has meant that the regulators have been more open to companies proposing outputs/ outcomes that it may

provide an allowance for and/or an incentive. The regulators require that the companies provide evidence that these outputs/ outcomes are those that customers value and are willing to pay for.

To some degree, the move to allow companies to propose outputs is a requirement for effective customer engagement. Without this flexibility, companies may not be able to investigate, discuss, and analyse different services and service performance options with their customers.

Alongside this flexibility the regulators have set out guidelines on the evidence that needs to be presented (e.g. willingness-to-pay analysis, cost benefit analysis, and customer impact analysis) and how they will assess the outputs/ outcomes. However, even if detailed guidance is provided there can be issues with providing too much flexibility to companies. For example, Ofwat discovered issues with the implementation of this approach for PR14. Ofwat initially only set two performance commitments – leakage and the service incentive mechanism (this was around customer service response) – in order to put the onus on companies to set out the outcomes their customers wanted. The companies defined all other performance commitments, but this led to inconsistencies across a range of outputs that, practically, should have been similar. This made it difficult for stakeholders to compare performance across companies and even make comparisons with the company's historical performance.[25] Towards the end of PR14, Ofwat ended up re-introducing five common performance commitments for all the companies, although not all the companies had the same definitions for them.

As a result of its experiences in PR14, including that the evidence varied significantly across companies (particularly on willingness to pay), Ofwat moved back to having a more comprehensive set of common of performance commitments for PR19. The common performance commitments in PR19, except those related to customer and developers measures of experience, were set by the DWI and the Environmental Agency. Companies were able to propose bespoke performance commitments and outcome delivery incentives. Across the other case studies, regulators have retained a set of common performance standards.

We generally observed across the case studies (although this was not universal) that financial incentives (aside from standard expenditure incentives)[26] are typically reserved for the common (and well established) performance standards, with reputational incentives largely adopted for the bespoke outputs.

While the messaging shift to outcomes/ outputs was introduced in the UK for PR14 and RIIO, prior price controls had set out that outputs delivered to customers were an important part of setting the revenue allowances. This is also the case for other regulators, for example, the AER's benchmarking is undertaken based on a set of high-level outputs and ESC previously published information on the water companies' prices and service performance.

We summarise each of the regulators' approaches in turn below.

3.3.1. ESC

A key objective of the PREMO framework is to ensure that price submissions focus on the customer outcomes that the company proposes to deliver. The ESC considers that outcomes should be derived through customer engagement, tested with customers, and translated into measurable outputs with agreed performance targets.

The company should set out these outcomes and the associated targets in its price submission, with the actions it plans to undertake to achieve them, the related costs and cost savings and how they will impact prices. The main opex and capex movements should be linked to proposed outcomes, demonstrating how they improve customer value.

[25] After collecting consistent data from companies for several years through the 'June Returns', Ofwat decided to cease the June Returns process in order to reduce the regulatory burden on companies in line with the Grey Review. It is not clear how successful this approach was as companies still need to provide a lot of this data but Ofwat lost some control of it.

[26] The level of under-/out-performance a company is able to bear/ retain against its expenditure allowances.

The ESC requires all water businesses to implement a guaranteed service level (GSL) scheme that establishes payments/ rebates to customers when the company fails to meet specified service standards. The aim of the scheme is for businesses to internalise the cost of investment decisions that leave some customers with poor service. The ESC recommends that businesses should engage with customers to identify which services and guaranteed levels should be covered by the scheme and the amount of the rebates.

Since before the introduction of PREMO, the ESC issues annual water performance reports. These compare water businesses across a set of common performance measures (e.g. water consumption, typical bills, customer service and reliability), making this information available to customers and other stakeholders. In addition to this process, with the introduction of PREMO the ESC launched a new 'outcomes reporting' process, where each company is required to report annually to customers on its performance, assessing whether it has delivered the outcomes set out in its pricing submission, and providing justifications and plans for addressing any performance shortfalls. This is intended to make businesses more accountable to their customers and has become necessary as under PREMO each company proposes its own set of outputs and associated targets. For 2018-19, the first year of outcomes reporting, businesses were asked to rate their performance against outcomes using a simple traffic light system.

The ESC issues an outcomes report on the businesses' self-reporting. The ESC indicated that while its first outcomes report has been mainly to provide a summary of the self-assessments, in the future these reports will provide more commentary on the businesses' performance, with potential implications for their rating on the Performance element of PREMO at the next price review.

3.3.2. ESCOSA

SA Water's current service standards cover several areas including customer service and complaint handling, connection services, field crew attendance at the site of service issues, and service restoration and clean-up.

SA Water is required to report on a quarterly basis while small and intermediate water retailers report on an annual basis.

In its draft decision, ESCOSA has set 33 service standards that SA Water is required to meet. ESCOSA expected that SA Water would propose a set of service standards. The service standards SA Water proposes can be different from the existing service standards.

The proposed new service standards include:

- customer satisfaction;
- resolution of customer complaints on first contact;
- timeliness of complaint resolution;
- escalation of customer complaints to the Energy and Water Ombudsman SA (EWOSA); and
- frequency of water interruptions.

3.3.3. Ofwat

In PR14, Ofwat introduced an 'outcomes approach', which has continued into PR19. Under this approach, a new set of high-level explicit objectives, known as outcomes, became part of what companies commit to achieve. The outcomes approach also encompasses associated performance commitments (i.e. promises made in a measurable way) and associated incentive schemes (i.e. rewards and penalties for achieving or not achieving those promises). Outcomes, associated performance commitments and associated incentive schemes are all decided jointly by companies, customers and Ofwat.

Ofwat provides guidance on potential outcomes, performance commitments and incentive schemes. There are some outcomes, performance commitments and incentive schemes that Ofwat pushes more strongly, to the point of establishing them as common and compulsory for all companies. In PR19, for example, Ofwat established 14 common and compulsory performance commitments for which Ofwat expects companies to set stretching levels.

Companies engage with customers to establish preferred outcomes, performance commitments and incentive schemes. Companies propose outcomes, performance commitments and incentive schemes to Ofwat via the business plan submission process. Ofwat provides views on companies' proposals during the business plan submission process and accepts or rejects companies' final proposals in the final price determination.

At the beginning of PR19 Ofwat communicated its expectation that companies should set stretching levels for all their performance commitments. This meant:

- Setting appropriate initial service levels.
- Challenging the level of stretch in their performance commitments (Outcome Delivery Incentives (ODIs)) with their customers, CCGs and other stakeholders against a range of approaches including, but not limited to:
    - cost–benefit analysis – taking a wide range of information on customer preferences into account;
    - comparative information – companies should use a forecast upper quartile level for each year of the price control;
    - historical information;
    - minimum improvement;
    - maximum level attainable; and
    - expert knowledge.

For the particular case of leakage, Ofwat challenged companies to set stretching performance commitment levels to:

- achieve forecast upper quartile performance (in relation to leakage per property per day and leakage per kilometre of main per day) where this was not being achieved – or justify why this would not be appropriate;
- achieve at least a 15% reduction in leakage (one percentage point more than the largest reduction commitment at PR14) – or justify why this would not appropriate; and
- achieve the largest actual percentage reduction achieved by a company since PR14 – or justify why this would not appropriate.

The small print of PR19 methodology clarified that leakage reduction should not go beyond the economic level of leakage, which is the traditional approach that Ofwat has used since privatisation to let companies decide up to which point they should reduce leakage.

The companies have both reputational and financial ODI incentives to ensure that they deliver on their service targets.

3.3.4. WICS

Scottish Water's service levels must comply with the high-level quality objectives set out by the Scottish Ministers.

More detailed performance targets are agreed by the company with the Customer Forum. In SRC15, targets were measured in terms of:

- Overall Performance Assessment (OPA) – This composite indicator combines 17 service measures covering water quality, interruptions, pressure, leakage, sewer flooding, and pollution and sludge treatment.
- Household Customer Experience Measure (hCEM) – An indicator based on the number of customer contacts and the results of customer experience surveys.
- Overall Measure of Delivery (OMD) – A composite indicator of progress towards target investment outputs in multiple key areas of delivery, used to track the delivery of the investment program over the regulatory period.
- Level of leakage in million litres per day.

These performance measures are not directly tied to any incentive mechanism. However, they are published yearly by WICS, providing the company with a reputational incentive. In addition, Scottish Water is required to make payments to customers, either automatically or following a claim, in relation to events such as water quality alerts, interruptions and sewer flooding, as well as customer service shortcomings such as not answering complaints promptly.

Scottish Water's performance is also monitored by the Delivery Assurance Group (DAG), which includes representatives from DWQR, SEPA, CAS, SPSO, Scottish Water, the Scottish Government, and WICS. The DAG uses the OMD to measure Scottish Water's quarterly progress against its targets. In addition, the DAG monitors Scottish Water's delivery of late projects from previous controls.

3.3.5. AER

Reliability standards for distribution networks are set by state and territory governments, with the objective of efficiently balancing the costs and benefits of a reliable electricity supply. In 2014, following concerns that reliability standards had driven inefficient network investments, the COAG Energy Council endorsed a new approach to setting distribution reliability targets, linked to the value that customers place on reliability.

In 2009, the AER established a service target performance incentive scheme (STPIS) for distribution networks, with the aim of aligning the networks with the value that customers place on reliability. The STPIS sets targets for the average duration and frequency of outages, and also accounts for customer service and faults, and call centre performance. A GSL component requires DNSPs to compensate customers if performance falls below defined levels. The STPIS also provides a financial reward (or penalty) if networks meet (or fail to meet) their performance targets, set at 5% of allowed revenue. Performance targets are adjusted every five years, linked to recent performance. Accordingly, DNSPs must maintain reliability improvements over time to continue to benefit from the scheme.

In 2018, the AER has been tasked with estimating the price customers are prepared to pay for a reliable electricity supply, termed the value of customer reliability (VCR). The VCRs calculated by the AER will be used as inputs to the economic regulation of network businesses. For example, the AER has used its VCR estimates in the application of the distribution STPIS in the latest round of regulatory determinations. VCRs may also be used by other parties, including to inform jurisdictional reliability standards and targets.

As noted above, the AER has been exploring a new approach to customer engagement through the AusNet Services New Reg trial. As part of this trial, AusNet Services and the Customer Forum have negotiated a proposed customer service incentive scheme, which AusNet Services has included in its regulatory proposal to the AER. In response to this development, the AER is consulting on whether to make a new incentive scheme for customer service. The scheme would reward (penalise) DNSPs for improvements (deteriorations) in customer service. The AER intends to adopt a flexible, principles-based approach (in contrast with the more prescriptive approach adopted by the STPIS), allowing the DNSPs to develop bespoke incentive arrangements in consultation with their customers. The AER would then assess the scheme against its principles.

3.3.6. Ofgem

For RIIO-2, Ofgem has distinguished between services and services levels delivered via licence obligations, specific deliverables with funding (price control deliverables) and service improvements that Ofgem seeks to incentivise (output delivery incentives):

- **Licence obligations**. These set minimum standards and will be imposed as a condition of the licence. Failure to meet these standards could lead to enforcement action and penalties. Ofgem would use its enhanced engagement framework to determine what the output categories and minimum service standards should be.
- **Price control deliverables**. These capture outputs that are directly associated with baseline funding. Ofgem set out that these could include:

- Outputs or input activities to be delivered to a stated standard, for example in response to government policy or Ofgem direction (but which are not set out in the licence).
- Output or input activities that are significant and /or high value (e.g. a list of large capital projects to a stated specification, budget, and timing).

- **Output delivery incentives.** These apply where service quality improvements beyond the minimum standard may be in the interests of consumers. These could include bespoke output incentives proposed by the companies. These outputs will have incentive mechanisms applied to reward or penalise performance. The overall cost of such financial incentives cannot exceed the value of service improvements to consumers. Ofgem proposed that it would set stretching targets for individual companies. Ofgem would seek to set targets based on the information that is available at the time of the final determination, and ideally put in place mechanisms (at the sector level) that allow targets to be automatically recalibrated to stretch levels based on achieved performance during the price controls.

A mix of data is used to set service level targets. Ofgem expects companies to undertake cost benefit analysis and demonstrate that they have engaged with stakeholders on the outcome.

3.3.7. OEB

The OEB has selected a series of key performance metrics that it uses to monitor the utilities' performance.

OEB publishes electricity utility scorecards to measure how well each of Ontario's utilities are performing each year. The scorecard is designed to encourage utilities to operate effectively, continually seek ways to improve productivity, and focus on improvements that their customers value. Utilities report their scorecard performance results annually and make the results available to the public.

The scorecards cover the following performance criteria:

- service quality, which includes metrics on connection and appointment timing;
- customer satisfaction, which includes metrics such as billing accuracy and complaints;
- system reliability, including the frequency and length of power disruptions; and
- cost control, which comprises an efficiency rating based on how efficiently utilities manage their costs, and a metric for total costs per customer.

3.4. BUSINESS PLAN INCENTIVES

A number of regulators have been introducing additional incentives to improve the quality and ambition of the companies' proposals. The objective of these efforts is to ensure the companies 'put their best foot forward' from the outset rather than waiting for the regulator to respond to their initial proposals. These incentives, understandably, are focused on making sure that the evidence on what customers' value is front and centre of the business plans. The incentives are also intended to make sure the companies' plans incorporate tough efficiency challenges and incentivise the ongoing provision of services.

The mechanisms that have been put in place include financial, process, and reputational incentives. Ofgem, Ofwat, and the ESC have provided explicit monetary rewards, where the regulator considers the companies have delivered good business plans. However, Ofgem has moved away from this approach for cases where it considers that there are an insufficient number of regulated companies to undertake a robust comparative assessment of the whole business plan. These regulators regulate sectors with double digit numbers of companies, the exception are the energy transmission and gas distribution sectors that Ofgem regulates. ESC, Ofwat, WICS, and OEB all offer an expedited proportionate (or risk-based) review, where the regulator considers the companies have submitted high quality proposals. ESCOSA and the AER may allow expedited reviews for parts of the companies' business plans that have been agreed with their Customer Forum (see section 3.1).

The proportionate and expedited reviews all have reputational incentives associated with them. In addition, regulators, such as Ofwat and ESC, make a point of setting out, for stakeholders, which companies have provided good business plans and undertaken robust customer engagement.

The use of reputational incentives, early in the process, to publicise positive and/ or negative aspects of companies' business plans appears to be an effective and low-cost approach, particularly when there is extensive customer engagement. The reliance on comparative assessment for fast tracking and/or upfront financial rewards for good business plans indicates that these may not be appropriate approaches for IPART to consider.

In recent years regulators have adopted new approaches to dealing with information asymmetries and to encourage businesses to put their best foot forward from the start rather than relying on a 'propose and respond' type approach. These approaches have largely been in the form of financial, process (i.e. faster/ easier acceptance of business plans) or reputational incentives to encourage companies to reveal, in their first business plan, prudent and efficient expenditure levels.

These incentives are intended to work alongside customer involvement in the regulatory process i.e. they have been used to encourage the companies to adopt strategies that ensure the value for money outcomes for customers.

Business plan incentives contribute to the regulators' methods of:

- determining and incorporating customer preferences;
- assessing efficient costs of service provision, including approaches to addressing asymmetric information;
- regulating service levels; and
- incentivising efficient investment and level of service provision.

We consider that some common approaches have developed across the regimes:

- **Reputational incentives are used for all company ownership types.** Regulators of state/ government owned utilities have focused more on reputational incentives, although financial ones are still used.
- **Benchmarking is considered important where financial incentives are applied.** Comparisons between companies are used to help identify companies that deserve rewards. Ofgem rolled back some incentives, i.e. it removed fast-tracking for transmission and gas distribution companies, on the basis that it was not sure of the application when it only had limited numbers of companies to compare. This was also the reason it decided to assign a high/ low confidence to costs it could not assess with benchmarking (or independently) and provide lower powered incentive for low confidence costs.

- **Move towards 'simplifying' incentives**. Both Ofgem and Ofwat moved away from the more complex mathematical formulation of incentive compatible menus.[27] Similarly ESC's PREMO upfront reward has a simplified mechanic of Ofwat's PR14 menu and Ofgem's Information Quality Incentive (IQI) approaches.
- **Proportionate reviews.** ESC, Ofwat and OEB apply proportionate reviews, i.e. can fast track companies through the process and/ or only focus on areas of concern if they consider that the broader business plans deliver value for consumers. We note that Ofgem has moved away from fast-tracking (a proportionate approach) for transmission and gas distribution companies on the basis that there were limited numbers of companies to carry out a relative assessment. ESCOSA, WICS, and, where New Reg is adopted, the AER, can expedite some part of the process if they accept the negotiated positions. For example, prior to draft determination, WICS will set out parameters for negotiation between the company and the Customer Forum. If agreement is found, then WICS ratifies the position without further scrutiny. The AER and ESCOSA have said that they are minded to accepting positions that are agreed (although this commitment is non-binding).

The move towards 'simpler' incentive mechanisms for Ofgem and Ofwat is interesting. The reasons seem to be a mix between wanting to enable better understand of incentive arrangements for stakeholders (and potentially the regulated companies) and because the regulators wanted more flexibility to reward/ penalise companies than the mathematical properties of menu regulation allowed.[28] For example, Ofgem was not convinced that the IQI sufficiently influenced company behaviour to present its best estimate of efficient expenditure. While it is difficult to know if this shift will lead to better outcomes, in practice it appears to give the regulators more discretion around the upfront financial incentive and efficiency sharing factors the companies face.

Alongside the business plan incentives, a number of regulators have also implemented 'proportionate' or risk-based assessments. While this incentive sits alongside the 'business plan incentive' it is very dependent on the companies' customer/ consumer engagement. The regulators have been keen to stress that this does not mean a less rigorous approach, rather the objective of these regimes is to focus regulatory effort on issues or companies where risks of impact to customers are highest or where there is evidence of underperformance.

So, have the adoption of innovative approaches to ensuring that business put their best foot forward and set out the services and performance customers value worked? It is difficult to give a definitive answer. Ofgem considered that fast-tracking WPD during the RIIO-ED1 process led to benefits for all consumers that outweighed the gains to WPD.[29] But for RIIO-2 it has removed fast-tracking for transmission and gas distribution companies because of a lack of comparators. Ofwat has continued using fast-tracking but has made some refinements to the level of upfront reward that it provides. It is too early to tell whether the ESC's process has been successful, and whether the negotiated/ proportionate reviews adopted by ESCOSA, the AER, and OEB will continue. However, the use of reputational incentives, early in the process, to publicise positive and/ or negative aspects of companies' business plans appears to be an effective and low cost approach, particularly when there is extensive customer engagement.

The reliance on comparative assessment for fast tracking and upfront financial rewards for good business plans indicates that this may not be an appropriate approach for IPART to consider.

We summarise each of the regulators' approaches in turn below.

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[27] Incentive compatibility means that the choice that maximises the companies' expected return on regulated equity is also the companies' best view of its efficient and prudent expenditure need to deliver its outputs.

[28] There are also concerns that menu regulation do not sufficiently target management who may have different incentives from equity holders.

[29] Ofgem (2014), *RIIO-ED1: Final determinations for the slow-track electricity distribution companies: Overview*, November, page 9.

3.4.1. ESC

ESC established the PREMO incentive for its 2018 price review of water companies. The PREMO framework relates to Performance, Risk, Engagement, Management, and Outcomes.

PREMO provides a financial incentive in terms of a higher return on equity for companies that self-identify as ambitious (an advanced or leading company) and that the ESC agrees with.

The ESC can compare the business plans to identify the most ambitious ones. There is also a reputational incentive for companies in the form of being awarded a high rating, as the ESC publishes all the ratings.

The ESC allows high-quality submissions to be fast-tracked with the aim of allowing the ESC to place greater focus on lower-quality submissions. Fast-tracking is not based on PREMO ratings that relate to the level of ambition, but rather on an assessment of the clarity of the proposals and quality of supporting information.

High-quality submissions allow the ESC to make an early draft decision by accepting a proposal in its entirety or with minimal changes without undertaking further review. Conversely, if the information provided by the company, as it moves through the stages of the price review, is not sufficient, the ESC can reject a submission and ask for a resubmission.

3.4.2. ESCOSA

ESCOSA introduced a negotiated settlement approach for its current price review for SA Water. ESCOSA's approach is based on the WICS regime (see below). ESCOSA's process involved the formation of a Customer Negotiation Committee (CNC) to represent SA Water's customers and challenge SA Water's business plan.

As part of SA Water's 2020 Determination, ESCOSA required that SA Water establish and support a Negotiation Forum. ESCOSA appointed an Independent Probity Advisor to provide oversight of the forum. ESCOSA stated that the negotiation process is non-binding and that ESCOSA remains responsible for making a regulatory determination. None the less, ESCOSA would accept or give significant weight where issues have been successfully negotiated and are consistent with regulatory guidance.

The CNC's report is made publicly available for stakeholders to review and comment on the positions reached.

3.4.3. Ofwat

Since PR14 Ofwat has adopted a risk-based approach to assessing companies' business plans. Ofwat's aim is to focus regulatory effort on issues and companies that could have the biggest impact on customers. During price controls, companies are placed in different groups based on their business plan submissions and a parallel price control process operates with different regulatory treatment for each group. For PR19 business plans were assessed against three key characteristics (quality, ambition, and innovation) and nine key test areas that reflected Ofwat's PR19 themes.

Ofwat introduced a number of incentives in PR14 and these continued into PR19.

- **Process**. Ofwat undertakes an initial assessment of business plans. Where it determines that the companies have set out well-justified business plans it can award them 'exceptional' or 'fast track' status. These business plans are then agreed early, with a focus only on the parts that Ofwat were concerned with.
    - **Exceptional –** Business plans categorised as high-quality with significant ambition and innovation for customers, and limited or no intervention required. Companies receive a financial benefit and an early determination.
    - **Fast-track** – High-quality business plans with limited or no intervention required but not ambitious or innovative enough to be exceptional. Companies receive a financial benefit and an early determination.
    - **Slow-track** – A level of material intervention is required to protect the interests of customers. Companies receive standard incentives and price control timings.

- **Significant scrutiny** – Business plans assessed as well short of required quality, with extensive material intervention required to protect the interests of customers.

- **Financial**. Exceptional and fast-track companies receive an additional monetary incentive of up to 35bps of return on regulatory equity (RoRE) for exceptional companies, and 10bps for fast track companies. Companies that Ofwat determines require 'significant scrutiny' receive reduced cost sharing rates and a cap on outperformance payments.

Both incentives also act as reputational incentives as Ofwat publishes its findings on the business plans' quality.

3.4.4. WICS

WICS introduced a negotiated settlement approach for its 2015-21 price control and retained it for its 2021-27 price control. A Customer Forum was tasked with seeking an agreement with Scottish Water on its business plan. WICS set out that if Scottish Water and the Customer Forum reached an agreement it would accept this as its draft determination. This means that WICS ratifies the negotiated position and Scottish Water avoids additional scrutiny on that part of their business plan.

The Forum's minutes and agreed changes were made publicly available for stakeholders to review and comment on as part of WICS draft and final determinations.

3.4.5. AER

The AER largely relies on reputational incentives to encourage companies to put their best plans forward. If the AER determines that companies' proposals, or parts of the proposal, are in the interests of consumers then it can accept these proposals and not replace the companies' proposal with an alternative allowance/ output.

A key change in recent years, however, has been the AEMC's and the AER's insistence that companies demonstrate that customers' views are clearly considered in the companies' proposals. Where the companies demonstrate this and show that the proposals match customers' preferences and deliver value, the AER is more likely to accept their proposals.

The AER has also opened up the possibility of expediting the regulatory process when the New Reg approach is adopted. The AER has not committed in advance to accept any of the negotiating positions reached by the parties but has indicated may expedite its regulatory assessment by undertaking a less detailed examination of areas upon which agreement was reached.

3.4.6. Ofgem

During RIIO-1, Ofgem used a fast tracking incentive which provided a combination of financial (2.5% of totex), process (early agreement of the company's business plan), and reputational rewards (the plan was identified as high quality and offering customers value for money). Ofgem also used a menu approach (referred to as the IQI) to ensure that its financial incentive meant the companies could not do better (in terms of RoRE) by not revealing their efficient and prudent costs from the outset.

For RIIO-2, Ofgem has dropped the fast tracking incentive for transmission and gas distribution companies on the basis that it was not sure it was effective when there were few companies to compare. It has also moved away from the IQI to what it considers to be a simpler incentive mechanism – the Business Plan Incentive (BPI).

The reasons for removing fast tracking included:

- Highly concentrated ownership structures were considered to undermine benefits of fast tracking which relied on companies competing against each other.

- For transmission, the companies were not easily comparable. Information revealed by one company was less applicable for other companies and therefore harder to use to set challenging targets.

- Fast tracking as it did not leave sufficient time for enhanced consumer engagement .

3.4.7. OEB

The OEB has adopted a proportionate approach to reviewing companies' rate proposals. OEB's approach means that companies that have good historical performance, benchmark well (on expenditure and customer satisfaction), and demonstrate good continuous improvements, can receive a streamlined approach, which at one end involves a community meeting and the OEB scrutinising issues on a case-by-case basis, with no legal notice or hearing being required.

The extensiveness of the review is determined based on an applicant's performance against scorecard metrics, the type and scale of application, and how well the application aligns with OEB policy.

Scorecard metrics include measures of service quality, customer satisfaction, system reliability, and cost control. There are four possible levels of adjudication: no hearing, abridged hearing, focused hearing, and fully adjudicated hearing. The first level is described as requiring no legal notice and no hearing while the highest level is described as being subject to full process with all issues open.

3.5. EFFICIENCY ASSESSMENT AND WITHIN PERIOD EXPENDITURE INCENTIVES

In this section, we consider methods for addressing asymmetric information, in order to assess and encourage efficient expenditure. Again, these approaches work in conjunction with customer engagement and the business plan incentives.

Where the regulators in our case studies cover multiple companies, they all attempt to undertake some form of benchmarking between the companies in order to determine a base level of efficient costs. Where there are fewer companies, regulators tend to rely on base-step-trends approaches for opex and bespoke assessments for capex. Benchmarking, when conducted appropriately, is likely to provide useful information on the regulated companies' achievable efficiencies.

Benchmarking almost certainly provides additional useful information on the efficiency of a regulated company compared to relying solely on the company's own expenditure. However, where the regulator has only one or a small number of companies benchmarking may not be viable. While inter-jurisdictional or international data can be used there are significant issues in ensuring that the data and the companies' outputs are comparable.

The application of within period expenditure incentive mechanisms is mixed. Ofgem and Ofwat apply a totex incentive mechanism, which sits alongside their totex assessment approach. They adopted this mechanism in order to equalise the incentives between capex and opex. The AER has separate incentive mechanisms for opex and capex, but has tried to equalise these through setting approximately the same incentive rates for both. Some regulators – including the ESC, ESCOSA and OEB – do not appear to have any specific mechanisms. WICS effectively has a cap on over-/under-performance that Scottish water retains/ bears.

In our view a totex incentive mechanism is a good approach to equalising incentives between opex and capex. The capitalisation rate, which allows 'opex' to be added to the regulated asset base (RAB), helps to remove any bias that might exist in favouring capex over opex as it would, to the extent the expenditure is prudent and efficient, maintain or grow the RAB (which is what attracted a certain type of investor). The level of the sharing factor depends on the regulator's view of the appropriate level of risk allocation between companies and customers.

In addition to any business plan incentives for companies to reveal their forecast efficient expenditure levels, ex ante assessments of expenditure are an important part of the price control in our case studies. Alongside the initial setting of efficient expenditure allowances, regulators will typically introduce some form of sharing mechanism i.e. the incentive strength is less than 100%.

Methods for assessing efficiency across the case studies fall into three broad approaches:

- Benchmarking – either on a bottom-up basis, e.g. activity, and/ or opex and capex based, or on a top-down basis, e.g. totex.
- Bespoke assessment – for example, an engineering assessment of specific capex projects.
- Base-step-trend approach – this is typically only undertaken for opex, and relies on using revealed opex from the previous regulatory period to set opex in future periods.

These methods are not mutually exclusive, and there are examples of regulators (e.g. Ofgem) combining bottom-up benchmarking with totex benchmarking and bespoke assessments.

Unsurprisingly, regulators with several companies tend to rely on benchmarking as much as possible to establish efficient and prudent levels of expenditure. Regulators that rely heavily on benchmarking include the AER, OEB, Ofgem, and Ofwat. Ofgem and Ofwat use totex benchmarking, although Ofwat does use bespoke assessment for some enhancement expenditure.

Ofgem and Ofwat first used totex benchmarking in RIIO1 and PR14, and both have decided to continue to use totex benchmarking approaches for RIIO-2 and PR19, respectively. Both Ofgem and Ofwat consider that totex benchmarking helps them deal with the trade-off between opex solutions and capex solutions. Specific outputs/ outcomes that the regulators do not consider to be part of 'base' expenditure are assessed on their own merits i.e. if the expenditure is justified by customer demand, has the company undertaken an assessment of the options and is their expenditure proposals at an efficient level. This assessment is also extended to more lumpy expenditure, for example a new reservoir.

WICS appears to be the odd one out in terms of setting out how it will assess efficient costs going forward. WICS has set out that it will use Ethical Based Regulation (EBR) and focus on "*how and why money is spent*" in contrast with its previous focus on "*how much money was spent*".[30] WICS has not implemented this yet so it is not clear what it means in practice. We note that other regulators' approaches to benchmarking have focused on companies' outputs which is the why money is spent, and it provides an indication of the efficient levels of expenditure to deliver these outputs. Reading into WICS process, the allowances for opex and capex, and therefore efficiency setting, appear to be largely based on historical levels. Operating costs would also have an ongoing efficiency challenge applied.

In relation to prudency of expenditure, we note that some regulators have much a greater focus on asset management. For example, Ofwat requires specific monitoring and reporting on asset health, and Ofgem uses a set of Network Output Measures (NOMs) to monitor and assess network management outcomes.

We are of the view that where possible benchmarking should be undertaken. Benchmarking almost certainly provides additional useful information on the efficiency of a regulated company compared to relying solely on the company's own expenditure. However, where the regulator only has one or a small number of companies benchmarking may not be viable. While inter-jurisdictional or international data can be used there are significant issues in ensuring that the data, and the companies' outputs are comparable.[31]

As noted above, regulators will typically introduce some form of incentive mechanisms around the company's expenditure. The need for a specific mechanism is to try and remove any perverse incentives that a company may have to advanced, delay, or shift expenditure between activities (e.g. trading off opex for capex). These issues are explained in more detail in CEPA (2016b)[32] and CEPA (2018a).[33]

While most regulators treat opex and capex separately, both Ofgem and Ofwat have adopted a totex approach to setting expenditure. This means that they assess opex and capex together. The reason for this is to equalise the incentives for companies to adopt capex or opex approaches. The key element of the incentive mechanism is the

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[30] WICS (2019a), *2019 Decision Paper – Strategic Review of Charges 2021-2027: Asset replacement*, page 8. We would typically associate the how and why money is spent with the 'prudency' of expenditure and how much was spent would be the efficiency of the expenditure.

[31] For example, the AER has relied on international data for its benchmarking of electricity distribution opex. We, and other stakeholders, have raised concerns that the data is not comparable, and the controls applied in the modelling for these differences are insufficient.

[32] CEPA (2016b), *Advice on efficiency carryover mechanisms*, a report prepared for IPART, February.

[33] Note, we undertook a review of the incentives faced by energy networks for the AEMC: CEPA (2018a), *Expenditure incentives faced by network service providers*, a report prepared for AEMC, May.

capitalisation factor. This set the proportion of expenditure that enters the RAB and the proportion that is treated as occurring within year. The AEMC is also considering the use of totex as part of its electricity network economic regulatory framework review.

A review of the RIIO and PR14 approaches by KPMG and Aqua Consultants, concluded that its analysis generally supported the hypothesis totex "*can unlock significant efficiency gains*".[34] We do not consider that totex benchmarking is a pre-requisite for the use of a totex incentive mechanism. In other words, a totex level incentive mechanism can be used activity-based cost assessment as regulators need to consider the trade-off between opex and capex even if totex benchmarking is not used.

We note that Ofwat had symmetric sharing factors for PR14. However, for PR19 it has shifted to an asymmetric approach with the companies retaining cost savings but bearing more of the cost overruns. Ofgem has also focused more on penalising poor performance rather than necessarily rewarding good or outperformance. In our view a totex incentive mechanism is a good approach to equalising incentives between opex and capex. The capitalisation rate, which allows 'opex' to be added to the RAB, helps to remove implicit bias that might exist in favouring capex over opex as it would, to the extent the expenditure is efficient, maintain or grow the RAB (which is what attracted a certain type of investor to RAB based regulatory frameworks).

The table below provides a summary of the specific findings for each of the case studies.

Table 3.1: Efficiency assessment and incentives – summary

Regulator	Opex	Capex	Within price control incentive
ESC	Base-step-trend approach for opex. Some benchmarking was also undertaken.	Bespoke assessment.	ESC retained the ability to adjust companies' RoRE and PREMO rating if there was underperformance against their agreed outputs.
ESCOSA	Base-step-trend approach.	Bespoke assessment of capex plan.	Companies' retain/ bear under-/over-spend within period.
Ofwat	Totex benchmarking is used to set the efficiency totex levels for the companies. Some bespoke assessment may be used for some capex/ opex elements that are not easily benchmarked.		Totex sharing rates variable, asymmetric, and depend on the difference between the companies' totex proposal and Ofwat's view. The companies now bear more of the cost overruns compared to how much they retain if they underspend.
WICS	Base-step-trend approach.	Capex based on historical costs and bespoke assessment.	Scottish Water can choose to retain or share outperformance if the level of outperformance is below a cap. Beyond the cap, Scottish Water needs to discuss with its customers and the Scottish Government how the outperformance should be used. Scottish Water bears the

[34] KPMG and Aqua Consultants (2019), *Innovation and efficiency gains from the totex and outcomes framework*, January, page 20.

Regulator	Opex	Capex	Within price control incentive
			cost of any underperformance (but this is also capped).
AER	Base-step-trend approach for opex. Benchmarking used to determine if the base is efficient.	Some benchmarking used, but largely relies on bespoke assessment.	The companies bear/retain 30% of any out-/ under-performance. For opex, this is specifically calculated at 30%, for capex it is assumed to by 30% if the discount rate (WACC) is 6%.
Ofgem	Totex benchmarking is used to set the efficiency totex levels for the companies. Some bespoke assessment may be used for some capex/ opex elements that are not easily benchmarked.		Totex sharing rates set from a starting point (and upper bound) of 50%. The level is linked to the level of confidence Ofgem has in independently assessing the costs, with a higher incentive linked to greater confidence. The lower bound is 15%.
OEB	Benchmarking based on total costs, e.g. opex plus capital costs such as depreciation, capital additions. However, OEB is looking at more activity specific benchmarking to replace this.		We could not identify any specific sharing mechanisms.

3.6. METHOD FOR SETTING AND REGULATING PRICES

In this section we examine the options available to regulators for regulating and setting prices. We have focused on the form of regulation, being a price cap, revenue cap, or an alternative approach.

We find that both revenue caps and price caps are used by regulators in our case studies. However, several regulators have moved to revenue caps (from price caps, average revenue caps, or hybrid caps), with the aim of removing any disincentive for the regulated companies to reduce demand. Where a revenue cap has been adopted, the regulators have retained significant control over the price setting process. This includes setting out principles that the companies need to follow in setting prices, restricting the overall change in price levels (to avoid volatility), and approving the companies' methodologies and tariff statements.

All regulators either undertake or require companies to undertake pricing impact assessments.

Regulators have several options available to them about the type of mechanism in place to control the regulated companies' prices. We will not focus on the different attributes of these approaches in detail. IPART (2001), *Form of Economic Regulation For NSW Electricity Network Charges Discussion Paper*, provides a good summary.

We note the following:

- **Both revenue caps and price caps are still common**. It is not clear in all cases why particular approaches are chosen. For example, ESC and OEB let companies use different types of price control.
- **Pricing/ rules**. When a revenue cap is applied, the regulator retains the ability to assess the networks' charging proposals to ensure they meet the pricing principles/ rules.
- **Impact analysis is universally applied.** All regulators undertake at least some form of impact analysis on how charging structure changes will impact customers. This typically includes distributional analysis. Transition mechanisms to reduce the immediate impact of changes are common.

The reasons regulators – the AER, Ofgem, and Ofwat – stated for switching to revenue caps from average price caps, average revenue caps or hybrid caps include:

- **Remove incentives to increase demand** – In support of revenue caps over price caps or average revenue caps regulators highlighted the impact on companies' incentives for demand management (Ofgem and AER). In Ofwat's case it also moved to a revenue cap to reduce the incentive for companies to outperform the cap by selling greater volumes of water and because it reduced the disincentive on them to encourage customers to improve water efficiency. As revenues are attached to volumes under a price cap or average revenue cap this may reduce the incentive to implement solutions that reduce volumes. This is not considered the case under a revenue cap.
- **Efficient revenue recovery** – In some circumstances, regulators have argued that a revenue cap makes it more likely that efficient costs are recovered. Both the AER and Ofgem conclude that electricity distributor's costs are largely fixed and not related to output volumes. An average revenue cap or hybrid cap includes a volume driver which does not adequately capture this relationship.
- **Incentives for accurate forecasts** – The AER concluded that a revenue cap removes the incentive for companies to understate forecasts of volumes. If revenue is linked to volumes than the company benefits if actual volumes exceed forecasted volumes. While Ofwat has moved to a revenue cap it still has a symmetric revenue forecasting incentive. This is to incentivise companies to accurately forecast revenue recovery to protect customers from unnecessary bill shocks.
- **Allocation of demand risk** – Moving from a price cap or an average revenue cap or hybrid cap to a revenue cap moves demand risk from the company to customers. ESCOSA finds that this is an undesirable feature of revenue caps and partially accounts for this by including a mechanism that varies revenues following demand changes sharing this 50:50 between the company and customers. The AEMC, on the other hand, suggest that moving demand risk onto customers may lower overall costs but also that any shift in risks should be reflected in the allowed rate of return.

We could not find any evaluation the regulators have undertaken into whether the switch from a price cap to a revenue cap has achieved the stated objectives. However, not one of the regulators in our case studies have switched back from a revenue cap to a price cap. The regulators operating revenue caps do not appear to have raised any issues with the use rules, principles, and guidance to set pricing structures in line with their objectives.

We note that under a revenue cap prices decrease (or increase) when demand increases (or decreases). Under a price cap this would also happen when the next price control started. Therefore, any pricing impact is simply delayed until the end of the price control under a price cap.

We summarise each of the regulators' approaches in turn below.

3.6.1. ESC

The pricing framework allows companies to propose whether they want a revenue cap, price cap or a hybrid approach. Companies are required to explain how their proposed form of price control meets the requirements set out in the Water Industry Regulatory Order (WIRO) 2014, i.e. that pricing should:

- enable customers to easily understand the prices and how they are calculated, determined or otherwise regulated;
- provide signals about the efficient costs of providing services, while avoiding price shocks where possible; and
- take into account the interests of customers, including low income and vulnerable customers.

In addition to these requirements, the ESC considers several tariff principles when assessing price submissions:

- Tariff structures and the form of price control should ensure a sustainable revenue stream over the regulatory period.

- To avoid cross-subsidies, the revenue recovered from each tariff class should lie between the stand alone cost of serving the customers in that class (upper bound) and the avoidable cost of not serving those customers (lower bound).
- Tariff structures should be simple, understandable and cost reflective. The ESC recommends specific structures for certain services. For example, a two-part tariff (fixed + volumetric) for bulk and retail water.
- Volumetric charges should be set with regard to long-run or short-run marginal cost, where appropriate. Fixed charges should be set to recover the remaining revenue requirement for the tariff class.
- It is up to the company to demonstrate whether locational or postage stamp pricing is more appropriate.
- Tariff principles include a 'customer focus and equity' principle. Customers' ability to understand retail tariffs and service offerings and respond to price signals should be taken into account.

The WIRO indicates that price shocks should be avoided when possible. For the 2018 price review, the ESC defined a price shock as an increase of greater than 10% in any year for any individual tariff. The ESC indicated that for any proposed increases of over 10% it would consider the merits of the increase with regard to the cost of providing the service and the impacts on customers.

3.6.2. ESCOSA

ESCOSA sets a revenue cap for SA Water. Prior to the 2016 determination SA Water was regulated using an average revenue cap. This varied SA Water's revenue on a dollar per unit basis (kL for water and connections for sewerage). For the 2016 determination the Minister's Pricing Order required that SA Water be regulated using a revenue cap instead of an average price cap. It was outside ESCOSA's remit to consider the relative merits of each option. However, they did consider the impact on demand risk from the change and stated that as a principle SA Water should face demand risk instead of customers. To partially address this issue, ESCOSA implemented a demand variation mechanism, which shares revenue impacts from demand changes 50:50 between customers and SA Water.

SA Water's pricing is guided by the National Water Initiative's (NWI's) pricing principles and the state government's commitment to state-wide (postage stamp) pricing.

3.6.3. Ofwat

While the water and sewerage companies are regulated under a revenue cap, Ofwat sets the charging rules for the regulated companies to design their tariffs by.

The government, via DEFRA, has set out the principles for Ofwat to set the charging rules. In addition to setting cost-reflective charges, Ofwat must also have regard for the following principles:

- Fairness and affordability.
- Environmental protection.
- Stability and predictability.
- Transparency and customer-focused service.

The Environmental protection principle is relatively unique. DEFRA sets this out as a requirement to *"achieving the right balance between long-term planning, environmental regulation and the use of market mechanisms to secure the most efficient use of scarce water resources*."[35]

[35] Defra (2016), *Charging guidance to Ofwat,* January, page 8.

Ofwat undertakes impact assessments of its rule changes. This includes analysis such as the distributional impact on customers. However, because Ofwat only sets the rules, detailed analysis of charging is undertaken by the regulated companies. The rules require the companies' boards to approve impact assessments and handling strategies where increases are above 5%.

3.6.4. WICS

The Scottish water industry is subject to a price cap regime. WICS sets the prices for water and sewerage services that deliver ministerial objectives for the water industry at the 'lowest reasonable overall cost'. We have not been able to identify the reasons why WICS apply a price cap (or 'charge cap'). We note that it does apply the financial tramlines which means under/over performance can be shared with customers if it is below/ above certain levels. This means that the form of control is not a pure price cap approach.

The Scottish Ministers set out the Principles of Charging in the lead-up to the SRC. These are high-level guidelines for WICS's determination and are drafted in consultation with WICS, SEPA, DWQR, and CAS. The SRC21 Principles are:

- Customers should have certainty about the maximum level of charges they will face over the regulatory period.
- Charges should recover the full costs of providing services.
- Charges for similar services provided to customers of a similar category should be the same across Scotland.
- Charges should be broadly cost-reflective. For example, household charges for drinking water should be set to recover the cost of providing that service to that group as a whole.

Specific charge caps are set by WICS in terms of a permitted annual percentage increase in water charges.

WICS has regard to the impact on charges of the long-term level of investment required of Scottish Water to conduct its asset replacement program and respond to climate change. In its Final Decision paper for SRC21, for example, WICS suggested that charges should be transitioned over three regulatory periods, i.e. a relatively long period of around 18 years.

3.6.5. AER

The AER sets revenue caps for both electricity distribution (DNSPs) and transmission (TNSPs) companies.

The NER requires that TNSPs be regulated under a revenue cap and this has been the case since at least 2004, On the other hand, the NER allows the AER to choose what mechanism applies to DNSPs; this includes a choice between a price cap, revenue cap and hybrid caps. The AER has decided a revenue cap applies to the majority of DNSPs' revenue.

The AER recently set out their reasoning for applying a revenue cap instead of an alternative such as an average revenue cap or price cap. The AER saw three benefits from using a revenue cap:

- **Revenue recovery** – A revenue cap provides the highest likelihood of efficient cost recovery. Distributors costs are largely fixed and unrelated to energy sales and this is best represented with a revenue cap. In addition, there is no incentive to under forecast energy sales to gain revenues above efficient costs.
- **Price flexibility and stability** – Prices under a revenue cap may be less stable than an alternative during a regulatory control period. However, prices are more likely to be stable across regulatory periods. For example, under falling demand prices under a revenue cap will increase during a regulatory period ensuring there is no need for a substantial increase in the following regulatory period as there would be under a price cap.

- **Demand side management** – Under a revenue cap a company can improve their financial position by reduce costs. This creates an incentive to undertake demand management if it reduces overall costs. This is not the case with a price cap or average revenue cap where revenues are linked to volumes.
- **Demand risk** – The AEMC highlighted that the decision to apply a revenue cap moves demand forecast risk onto the customer. However, this may reduce overall network costs as companies no longer need to account for this risk. This could be partially passed back to customers through a lower allowed rate of return.

In addition, the NER sets out explicit pricing principles DNSPs must follow. The distribution pricing objective in the NER is to send price signals to users that reflect the efficient costs of providing network services. This is to enable customers to compare the value of using the network with the costs of using the network (i.e. to encourage the efficient use of the network).

The NER pricing principles are:

- Prices should be between the stand alone cost of providing the service to retail customers in the tariff class (upper bound) and the avoidable cost of not serving the retail customers (lower bound). This effectively prevents large cross-subsidisation between tariff classes.
- Prices should be cost-reflective and location specific, based on a long-run marginal cost (LRMC) methodology.
- The revenue recovered reflects the total efficient costs of providing the service to retail customers, and this should be done in a way that minimises distortions to the price signals for the efficient use of the network.

The AER assess all the DNPSs' pricing proposals and can approve or reject them.

3.6.6. Ofgem

The electricity distribution and transmission sectors are currently regulated under a total revenue cap approach. However, volume drivers had a larger role in setting total revenue for distribution prior to the current price control (RIIO-1). Revenue would be increased by changes in units distributed, number of customers as well as an adjustment for voltage category. This meant the regime was more akin to an average revenue cap rather than a total revenue cap.

For RIIO-1 Ofgem largely rejected the use of volume drivers for setting overall revenues. Ofgem felt that these volume drivers did not adequately capture the relationship between volumes and costs. They also concluded that it discouraged companies from adopting alternative solutions, such as demand management, as it would reduce units distributed. None the less, volume drivers are still used for some uncertain costs, such as connections.

Focusing on distribution charging; the way electricity distributors in GB charge is governed by the Distribution Connection and Use of System Agreement (DCUSA). This is a multi-party contract between the distributors, suppliers and generators. Ofgem makes the final decision when any changes are likely to have an impact on competition, discriminate between parties, relate to the safety or security of a network, it has concerns with the process, or it has raised the change.

The DCUSA manages the Common Distribution Charging Methodology (CDCM). The core principles for the CDCM are that it:

- must allow networks to comply with their licence conditions;
- must facilitate competition;
- must be cost-reflective;
- must remain up to date; and
- must be forward looking.

Ofgem considers that it should send price signals to customers about the costs their connections could impose on the network in the future.

Therefore, while the companies are regulated under a revenue cap, Ofgem has authority over the pricing rules.

Material changes to pricing rules that Ofgem makes are required to be supported by impact analysis including distributional analysis. For example, Ofgem recently made changes to how 'residual' charges (those not recovered through forward-looking charges) were recovered, and this process required an impact assessment to be undertaken.[36] The changes were to reallocate residual charges because the changing electricity system was leading to customers that were able to reduce their usage paying less of the residual charge. Ofgem conducted/ commissioned both short-term and long-term distributional analysis.

3.6.7. OEB

Pricing regimes of utilities vary from revenue cap and price cap to custom incentive rate-setting, but all rate applications must pass the OEB's adjudication process before being implemented.

The OEB sets the actual rates that customers pay. This process is guided by a set of principles:

- Fairness: customers should pay for the costs they cause (although for commercial customers OEB applies a beneficiary pays approach).
- Stability: customers need to be able to plan their budgets and any changes should be gradual.
- Simplicity: complex rate structures add cost and make it harder for customers to understand.
- Effectiveness: distributors recover their costs.

The OEB undertakes extensive analysis on the bill impact of the changes to the rate design. This includes distributional analysis.

3.7. ENVIRONMENTAL ISSUES

In this section we cover approaches to addressing environmental issues. In general, we found little evidence that economic regulators carry out detailed analysis of the environmental impact of their decisions. Instead, the economic regulators ensure that the companies have an efficient allowance to achieve environmental objectives that are typically set by environmental regulators or through government policy.

We do note that the regulators in the UK appear more willing, compared to other countries, to accept additional environmental outcomes that are proposed by companies, when these are supported by evidence on customers' willingness to pay.

All the regulators we have considered, while primarily in charge of economic regulation, have regard to relevant health, safety, and environmental legislation. Some regulators do not have an explicit mandate to support additional environmental objectives, although the companies they regulate may be able to propose environmental outcomes beyond their statutory obligations.

Conversely, some recent regulatory determinations, particularly in Great Britain, have explicitly included longer-term emissions reduction objectives set out by the government as a part of the price control.

With regard to environmental impact, we have found little evidence that the economic regulators carry out a detailed analysis of the environmental impact of their decisions. Rather they focus on ensuring that environmental policy and customers willingness-to-pay for environmental outcomes are included in their decisions. For example, during PR14, Ofwat published information on the companies' performances against certain environment related

[36] Ofgem (2019d), *Targeted charging review: decision and impact assessment*, November.

indicators – greenhouse gas emissions, pollution incidents sewerage, etc – but it referred to targets being set by the environment agency or on the basis of customers' willingness-to-pay.[37] In addition, Ofgem and Ofwat both include environmental outcomes in their impact assessments for the RIIO-2 and PR19 methodologies, but these largely focused on the regulators including environmental performance as part of their assessment.

While the approach to environmental outcomes vary across jurisdictions, we have identified a number of approaches:

- **Companies are allowed to propose environmental outcomes.** In jurisdictions where the regulator does not have an explicit environmental mandate (e.g. ESC, ESCOSA, AER), investment motivated by environmental considerations might still be allowed if the regulator considers that it is a good value proposition and is supported by customers.
- **Environmental outcomes are explicitly embedded in the price control**. Longer-term environmental and climate change mitigation outcomes, usually set out by the government, are reflected in the regulatory framework through obligations and incentives (e.g. Ofwat and Ofgem). The regulator may even allow investment that does not minimise monetary costs on the basis that it reduces emissions (e.g. WICS).

In addition to our broader case studies we also considered the EPA's approach to administering standards for the discharge of pollutants. The EPA has a Financial Capability Assessment (FCA) methodology used to identify situations where compliance with these standards may place an excessive financial burden on households or utilities. Based on the FCA, the EPA may decide to allow a utility to conduct the necessary improvements over a longer timeframe. In this case, compliance with environmental legislation appears to be subordinate to affordability considerations.

We summarise each of the regulators' approaches in turn below.

3.7.1. ESC

In the PREMO framework, environmental considerations that are important to customers can be proposed as outcomes and, like other outcomes, are considered by the ESC with regard to their impact on costs and customer value.

In the 2018 price review, most of the regulated water companies have committed to outcomes related to the environment, liveability, and water cycle management, which have been considered and accepted by the ESC.

3.7.2. ESCOSA

ESCOSA has no express remit to take account of environmental concerns that are beyond regulatory standards.

However, in its recent determination for SA Water, the regulator proposed new service standards motivated by environmental considerations (for example, on sewer overflows). This was in response to SA Water's proposals to undertake new investment in this area. Investment was supported by SA Water's customer engagement finding that customers were willing to accept the cost of reducing sewer overflows.

3.7.3. Ofwat

Government policy requires Ofwat to support the resilience of the water supply and sewerage systems to environmental pressures, population growth and changes in consumer behaviour.

[37] https://www.ofwat.gov.uk/regulated-companies/company-obligations/performance/companies-performance-2014-15/environmental-impact/

Ofwat requires businesses to consider resilience 'in the round', i.e. taking into account the interdependencies across operational, financial, and corporate aspects of their business. This assessment should consider short, medium, and long-term risks. Resilience commitments should also be supported by customer engagement.

Companies' plans to manage resilience should consider the best value solutions for customers in the long term. The key regulatory mechanism to ensure that environmental outcomes are considered and balanced against expenditure levels is a requirement for companies to justify their business plans by using CBA.

Other incentives, such as the Abstraction Incentive Mechanism (AIM), are also in place to encourage water companies to reduce their environmental impact.

3.7.4. WICS

Scottish Water is expected to achieve net zero emissions by 2040. In the 2021-27 price control, this translates into a strong focus on longer-term environmental considerations:

- In its assessment of Scottish Water's short and medium term asset replacement program, WICS considered that these assets contribute to the company's environmental performance and set an investment allowance that gives the company a high degree of confidence that these assets can be replaced in a timely manner.
- WICS includes £300m for 'enhancement and growth' in the company's annual investment target, to improve water quality, fund future growth, and meet the net zero target.
- Scottish Water is required to include emissions in its appraisal of capex interventions, which may result in the company adopting solutions that have a higher cash cost than if it did not have to consider emissions. WICS considers that it is prudent to make an allowance for these additional costs.

3.7.5. AER

Environmental protection arrangements do not fall within the remit of the AER or AEMC. However, there are ways in which both entities may take environmental protection issues into account in their decision making.

For example, the AEMC has observed that, while the National Electricity Objective (NEO) does not explicitly address environmental considerations, the fact that it refers to the long-term interests of consumers requires the AEMC to take into account whether its decisions are robust to the impacts of mitigation or adaptation risk associated with climate change.

In performing its role, the AER takes into account the environmental protection policies and requirements that impact the regulated network service providers (NSPs). NSPs are required to undertake cost benefit analysis (known as Regulatory Investment Test) for large individual projects. In its 2018 review of the Regulatory Investment Test for transmission (RIT-T), the AER assessed whether emissions reduction goals where adequately considered. For example, the revised RIT-T application guidelines set out guidance on the appropriate treatment of cost savings in meeting a renewable energy target.

3.7.6. Ofgem

Ofgem's environmental considerations are direct by government policy. For example, legislation in the UK sets a target of net zero greenhouse gas emission by 2050 (and 2040 in Scotland). Accordingly, a key objective of the RIIO-2 framework is to support the transition to a low-carbon energy system.

Ofgem has stated that it intends to use licence obligations, price control deliverables, reputational, and financial output delivery incentives (ODIs) to drive improvements from the networks. In particular:

- Companies must develop an Environmental Action Plan to explains how they will take responsibility for the environmental impacts of their network in RIIO-2.
- Companies must publish an annual environmental report setting out the environmental impact of their network and progress in delivering their action plan.

- Companies face sector specific common ODIs, as well as potential bespoke ODIs, to reduce environmental impacts.

3.7.7. OEB

Ontario's green energy legislation has required the OEB to shift the focus of regulation towards conservation, demand management, and incorporating renewable energy resources.

For example, the 2019-2022 OEB Business Plan puts forward an OEB initiative to conduct mid-term reviews of the six-year conservation framework in order to judge how well gas utilities are progressing toward their conservation targets.

3.8. INNOVATION

All regulators we examined operate incentive-based regimes, but some have added additional mechanisms to encourage innovation. These are in addition to the underlying incentives for companies to outperform their expenditure allowances.

In order to offset a lack of innovation, there appears to be two broad approaches that regulators are using or considering. The first approach involves regulators allowing explicit funding for innovation. The second approach is the use of 'regulatory sandboxes' which allow aspects of regulatory requirements to be relaxed for a time limited duration, in order for companies to trial innovative approaches.

We also note that some regulators consider that increased customer engagement may lead to the companies identifying innovations that they would not have otherwise discovered.

As a lot of these schemes are in their infancy (e.g. OEB's), or have yet to start (e.g. Ofwat's, AER's), and therefore it is difficult to assess their effectiveness. The fact that more regulators are introducing mechanisms to influence companies' behaviour around innovations indicates that they consider companies can do more.

All regulators we examined operate incentive-based regimes, this suggests that companies are incentivised to consider innovation to deliver efficiencies. However, some regulators have concluded that further innovation around services and products may not be captured by these underlying incentives. While most of the regulators have hoped that greater customer engagement may lead to increased levels of innovation in services and service quality, some regulators are providing specific funding or resources to support innovation.

We observe that there appears to be two broad approaches that do not rely on the underlying expenditure incentives:

- **Explicit funding.** Ofgem and Ofwat have set up funds available for projects that would not otherwise occur under the price controls. Although Ofwat is still consulting on how its fund will function. These funds are to be awarded based on a 'competition' where the regulators and an independent panel assess whether the project is truly 'innovative'. The AER has schemes, such as the Demand Management Innovation Allowance Mechanism (DMIAM) which provides funding for distributors to conduct research and investigation into innovative techniques for managing peak demand.
- **Regulatory/innovation 'sandbox'.** The OEB and the AER are moving forward with establishing innovation 'sandboxes'. These schemes have two major elements. Firstly, to provide a coordinated way of receiving advice about regulatory issues related to launching innovative products. Secondly, to waive or change rules temporarily if these are assessed to be a barrier.

We note that companies in certain sectors can apply for and receive partial Government funding for innovation projects. A good example of this is the Australian Renewable Energy Agency's (ARENA's) part funding of innovation projects undertaken by electricity and gas networks. The companies bear a proportion of the costs, but the government funding is on the basis of wider dissemination of the findings from the projects.

In addition to introducing the innovation fund competition, Ofwat noted that it has a role to play in creating the right infrastructure and culture for innovation, and it has called on companies to develop a Joint Innovation Strategy to

encourage further innovation in the sector. Ofwat considers that the Strategy should be an opportunity for companies to:

- "Define clear roles and responsibilities – rethinking the current architecture and rationalising activities in this space to enable more effective collaboration and coordination.
- Identify innovation gaps and opportunities – come up with a map of the innovation landscape, including new and different potential sources of funding, and opportunities across sectors.
- Prioritise activities that will provide significant benefits to customers and the environment across England and Wales, and possibly beyond."[38]

Ofwat wants companies to better engage across the supply change and to explore opportunities to use open (and big) data to help identify benefits for consumers. The joint approach could also enable the roll-out of large-scale innovations.

Many of these data-led schemes are in their infancy or have yet to start, so it is difficult to assess their effectiveness. Perhaps of most relevance is Ofgem's use of innovation project information during RIIO-ED1 to set an additional efficiency challenge (referred to as the 'smart grids benefits'). The innovation project information was sourced from projects that had been granted innovation funding during the previous price control. Ofgem also used the innovative approaches adopted by some networks to set tougher targets for other networks.[39] It is not clear whether some of the projects would have gone ahead without the innovation funding, and if they did where Ofgem would have had visibility of them, however Ofgem was able to use the information provided to set a further efficiency challenge on the networks.

We did not observe any innovation specific programs operated by ESCOSA aside from efficiency incentives. Details for the remaining regulators are in the sub-sections below.

3.8.1. ESC

The PREMO framework aimed at addressing a lack of ambition from water businesses in terms of outperforming their peers and the status quo. PREMO directly links regulated return on equity to the level of ambition demonstrated by business's submissions.

Outcomes are a key element of the framework and companies should demonstrate the customer outcomes they propose to deliver in their submissions. This includes associated targets and related costs, cost savings and impacts on prices. In effect, companies can propose their own incentive mechanisms if these have customer support.

3.8.2. Ofwat

Ofwat is launching a £200m innovation fund available to companies during the 2020-25 regulatory period. This funding is designed to complement Ofwat's existing PR19 framework and will fund activities not otherwise incentivised through the price review. The principles for the innovation fund are currently under consultation. The purpose is to drive transformational innovation that companies would not otherwise invest in. Innovation is not just seen as the development of new technologies but may also involve establishing new processes.

3.8.3. WICS

WICS has moved away from the creation of individual measures to encourage innovation. Instead it is asking Scottish Water to propose its capex allowance. The onus is then placed on Scottish Water to justify the extent that it is using innovative approaches. This expenditure will be assessed by the Customer Forum, but also by the Output

[38] Ofwat (2020), *Innovation funding and competition: further consultation on design and implementation*, May, pages 28-29.

[39] Ofgem (2014).

Monitoring Group (OMG).[40] WICS consider that this will (1) make Scottish Water think hard about how it incorporated innovation in its operations; and (2) required Scottish Water to communicate its initiatives with its customers.

3.8.4. AER

The AER established a demand management innovation allowance mechanism (DMIAM). This makes funding available to distribution networks for research and development of non-network solutions which have the potential to reduce long-term costs. Each network receives an allowance including a fixed sum and a proportion of the network's annual revenue requirement. Projects must meet a set of eligibility requirements, they must be 'innovative' and have a potential to reduce long term costs. Each distribution network is required to submit an annual report setting out the allowance claimed, and projects funded.

In November 2019, the COAG Energy Council agreed to the AEMC's recommendation to introduce a regulatory sandbox toolkit. This included changes to the National Electricity Law (NEL), National Energy Retail Law (NERL) and National Gas Law (NGL), which now need to be drafted and passed by the South Australian Parliament. The sandbox toolkit included three elements: an innovation enquiry service, a new AER regulatory waiver power and a new AEMC rule change process for proof-of-concept to be used if an eligible trial required new rules or alteration of existing rules for a limited time. It is currently envisaged that the first of these elements, as it does not require a legal change, will be provided by the AER prior to the other two elements.

3.8.5. Ofgem

For RIIO-2, Ofgem has set out that it will retain its innovation stimulus package (see below), which provides funding for projects that might not otherwise be delivered under the RIIO framework.

Ofgem has a broad suite of incentive mechanisms, one of these is the 'Electricity Network Innovation Competition'. This is an annual opportunity for electricity network companies to compete for funding for the development and demonstration of new technologies, operating and commercial arrangements. Up to £70m per annum is available through the competition. Examples of projects funded in 2019 included: development and trail of a solution to allow rapid electric charge points to operate at constrained grid locations and a solution to allow low carbon cost-effective back up generation in remote and isolated network locations.

3.8.6. OEB

The OEB launched a regulatory innovation sandbox in 2019. This allows proponents, which can be regulated utilities or unregulated businesses, to approach the OEB with a proposal. If the proposal meets a set of eligibility criteria the proponent can receive support from OEB staff. This can include potential temporary relief from regulatory requirements. The goal is to reduce uncertainty associated with regulatory requirements and allow innovations that provide real benefits to consumers to move forward.

3.9. ALTERNATIVES TO 'BUILDING BLOCKS'

Some regulators have considered alternative measures to regulating using traditional building blocks. The main focus has been on increasing competition in parts of the companies' service area or using external information to create pseudo-competition environments.

Ofgem and Ofwat have both looked at introducing competition for large discrete projects, rather than the incumbent monopoly provider undertaking the work. This is either through the regulator running a procurement process or forcing the company to run a competitive procurement process. The Australian Energy Market Operator (AEMO) can also run a competitive tender for transmission infrastructure in Victoria.

[40] The OMG is made up of Sottish Water, the Water Industry Commission for Scotland, the Drinking Water Quality Regulator, the Scottish Environment Protection Agency and the Consumer Futures Unit of Citizens Advice Scotland.

Ofwat also operates a New Appointments and Variations (NAVs) regime which provides a mechanism to facilitate new entry into the water and wastewater sector. Ofwat considers that there are significant benefits from new entry into the market and that the NAVs regime was important to route into the market. However, NAVs growth has remained limited and Ofwat is actively seeking to remove barriers that may block entry.[41]

Some regulators have explored alternatives to direct delivery of services by an incumbent monopoly provider. The aim is to increase competition, or create the effects of competition, and in turn reduce costs and increase innovation. In this sub-section, we have not focused on benchmarking across companies that is used to help determine efficient costs.

Regulators have explored using competitive tenders to procure infrastructure assets. For example, in Victoria the AEMO can choose to competitively procure "contestable augmentations" to the transmission network. If a non-regulated entity wins the tender, then a long-term revenue stream is created to pay for the project. Ofwat's regime is similar; regulated entities are required to consider using a tender and appointing an unrelated third party to build and operate infrastructure where this exceeds a threshold value. Ofgem, on the other hand, has developed a 'proxy' model where large value transmission projects are paid for outside of a normal price control settlement with their own project and financing costs. While it may still apply the model during RIIO-2, at this stage its analysis has indicated that currently customers' benefits are higher if projects are funded under the RIIO RAB based approach.[42]

Interestingly, both Ofwat's and Ofgem's approaches appear to be largely based on the success of Ofgem's competitively appointed offshore transmission owner (OFTO) regime. CEPA's analysis for Ofgem (CEPA, 2016b), indicated that there had been significant benefits from the regime compared to a mercantile or regulatory asset base type approach.[43]

We did not identify any relevant mechanisms for ESC, WICS and OEB. We discuss the alternative arrangements adopted by the remaining regulators to promote competition in the sub-sections below.

3.9.1. Ofwat

As part of PR19 Ofwat introduced 'direct procurement customer' (DPC) arrangements. The aim of the regime is to reduce costs, increase innovation and involve the market in setting the cost of capital. A DPC arrangement is where the regulated company undertakes a competitive tender and appoints an unrelated third party to design, build, finance, operate and maintain large scale infrastructure. In PR19, Ofwat set an expectation for companies to explore alternatives to directly delivering the infrastructure themselves. Companies are required to assess whether a DPC model would produce value for money for any projects above a threshold. DPC arrangements are new and it is not yet clear if they improve value for money.

Ofwat also oversees a new appointments and variations (NAV) regime, which provides a mechanism to facilitate new entry into the water and wastewater sector (i.e. companies that provide a certain area or group of customers with services). The NAV market remains small and as of 2017 only 61,000 residential customers are served under this regime. Ofwat states that given the small size of NAV companies they seek to minimise the regulatory burden. This includes suspending some conditions for appointment if they consider that doing so was in the interests of consumers. At a high level the regime Ofwat applies is to ensure that:

- Customers are no worse off than if they had been served by the local incumbent.
- Appointed companies can finance their functions.
- The applicant can fulfill its functions so the site is operationally and technically viable.

[41] Ofwat (2019a), *New appointment and variation applications - A statement of our policy*, July.

[42] Ofgem (2020a).

[43] CEPA (2016a).

3.9.2. AER

The AEMO is responsible for planning the Victorian transmission network. The AEMO can competitively tender certain infrastructure, referred to as a "contestable augmentation". The arrangement allows multiple parties to build, own and operate elements of the transmission system. Any new infrastructure can be charged to AEMO under a 30-year contract or if the augmentation is provided by an entity subject to AER regulation than the asset may be rolled into their RAB. We are not aware of any attempt to evaluate the effectiveness of this regime compared to alternatives.

3.9.3. Ofgem

Ofgem considered opening up large value transmissions project to competition. This idea developed from Ofgem's offshore transmission operator (OFTO) tendering program. This evolved into the Competition Proxy Model (CPM). This involves setting a largely project specific set of regulatory arrangements to cover the construction period and a 25 year operational period rather than a price control settlement for a portfolio of assets. The CPM works by benchmarking the allowed financing and project costs at a level expected from an equivalent project if subject to competitive tender. The data for the model, such as cost of capital, is largely sourced from the OFTO regime.

3.10. OTHER KEY FINDINGS

Below we note some other findings that do not cut across all the jurisdictions:

- **Length of price control.** While most regulators have not changed the length of their price control period, Ofgem extended it to eight years for RIIO-1 before reducing it back to five years for RIIO-2. It initially increased the length of the price control to signal to companies that they should consider the long-term more. However, it reduced the length back to five years as it considered that there was significant uncertainty surrounding network activity in the future. We note that the UK Government is considering whether longer price controls or the removal of 'long-term' projects from the price control cycle is appropriate for the water sector.
- **Financeability analysis.** Ofgem and Ofwat undertake financeability assessment of the its proposals to ensure that its decisions although a notionally efficient company to be financeable. This is particularly important given their approach to using set capitalisation rates. ESCOSA also considered the financial viability of SA Water in its recent decision.
- **Water retail competition.** Both WICS and Ofwat have opened the non-domestic sectors up to retail competition. Non-domestic water was opened up to competition in Scotland from 2008.[44] As part of its price review in 2014 (PR14), Ofwat separated out the retail operations of water companies in order to develop competition in retail for the non-residential sector. Competition for business customers was introduced in 2017. Ofwat has retained price protections for lower usage businesses and set a gross margin cap for business that had medium to high water usage.[45] Both regulators consider that opening up the non-domestic sector to retail to competition has been successful.

[44] WICS (2010), *Competition in the Scottish water industry achieving best value for water and sewerage customers: 2009-10*, December.

[45] Ofwat (2019c), *Future protections for business retail customers: Decision on Retail Exit Code – price protections*, July.

Appendix A ESSENTIAL SERVICES COMMISSION (ESC)/ WATER

Topic	Details
Overview	**The PREMO framework** The ESC determines revenue requirements for water businesses under a building block approach. The regulatory framework allows revenue caps, price caps, and hybrid approaches. For its 2018 price review of water businesses, the ESC launched a new incentive framework which links each regulated company's return on equity (RoE) to the outcomes it delivers to customers.[46] The framework is known as PREMO, from the five areas against which the businesses are rated: • Performance – how the company performed in relation to the outcomes set out in its previous submission. • Risk – how risk is allocated to the party best positioned to manage it. • Engagement – the effectiveness of the company's customer engagement. • Management – the company's focus on efficiency and managing controllable costs. • Outcomes – whether the company is proposing an improvement, the status quo, or a withdrawal of service standards.[47] The PREMO assessment is mainly forward-looking, as it focuses on the level of ambition demonstrated by a business's price submission, i.e. the extent to which a business challenges itself to deliver the outcomes and prices that customers value over the course of the next regulatory period.[48] However, Performance is evaluated against the previous price submission, making companies also accountable for delivering the outcomes to which they have committed.[49] **Return on equity** Each company is required to include in its price submission a self-assessment against each PREMO element and to provide an overall rating of the submission as basic, standard, advanced, or leading. The ESC will then also assign a rating for each PREMO element and to the price submission as a whole. The ESC's rating and proposed RoE are published in the draft decision.[50]

[46] ESC (2016c), *Water pricing framework and approach: Implementing PREMO from 2018*, October, p. 9.

[47] ESC (2016c), p. 10.

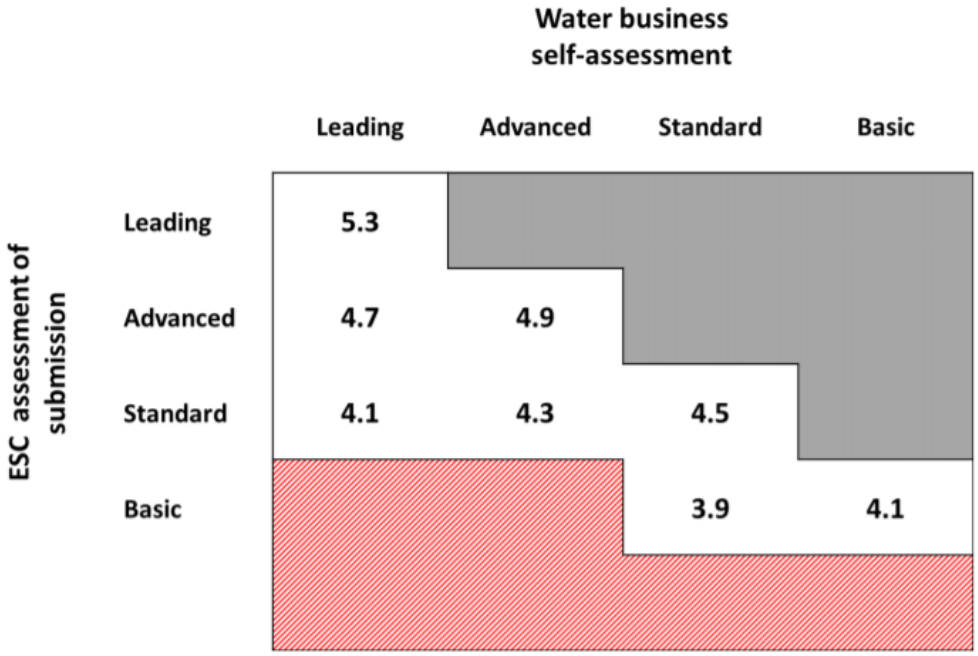
[48] ESC (2016c), p. 9.

[49] ESC (2016c), p. 10, footnote 12. Since the assessment of Performance is backward-looking, this element was not evaluated in the 2018 price review and will only come into effect for the next review cycle.

[50] ESC (2016d), *2018 water price review: Guidance paper*, November, p. 77.

Topic	Details
	The company's regulated RoE depends on the ESC's overall PREMO rating of its submission. The RoE is further maximised if the company's self-assessment matches the ESC's rating, as illustrated in the figure below.[51]

Figure A.1: Regulated real return on equity under the PREMO framework



The grey area at the top of the matrix indicates that the ESC will not assess a price submission more favourably than the company's self-assessment. The red shaded area at the bottom represents an area where the ESC will reserve its discretion. For example, it may require the water business to resubmit its proposal, or approve a shortened pricing period. Source: ESC (2016c), p. 45-46.

The ESC explained that the maximum RoE for a submission rated by the ESC as basic (4.1%) would be no lower than the benchmark real cost of debt, and possibly slightly higher. This means that the company would be able to at least recover interest costs associated with funding capital investment. The ESC considered that this rate would remain fairly constant over time and close to the long-run average cost of debt.

The maximum RoE for a submission rated by the ESC as standard (4.5%) is close to the cost of equity benchmark used to establish prices in the 2013 price review. This means that a business-as-usual price submission would be allowed a cost of equity close to the current rate. The maximum rates for an advanced (4.9%) and a leading submission (5.3%) are also interspersed at even increments of 0.4%.[52]

Aim of the regulation

PREMO was introduced to address a number of limitations the ESC had identified in its previous regulatory framework, including insufficient engagement of and accountability to customers, inadequate incentives to deliver services and manage risk efficiently, and a general lack of ambition from water businesses in terms of outperforming their peers and the status quo.[53]

[51] ESC (2016c), p. 12.

[52] ESC (2016b), *A new model for pricing services in Victoria's water sector: Position paper*, May, p. 41-42.

[53] ESC (2016c), p. 3.

Topic	Details
	The new framework increased the focus on customers and the outcomes they value and sought to introduce new incentives to align the businesses' interests with those of their customers.[54] These incentives are: • Financial – Each company can maximise its RoE by making an ambitious price submission. The RoE incentive is designed to encourage companies to submit their 'best offer'.[55] To be rated as advanced or leading, a company cannot just present a standard value proposition. Instead, it needs to position itself as a sector leader on key aspects of performance or at least commit to improving customer outcomes.[56] At the same time, the company does not derive any advantage from overstating its level of ambition, as the RoE also depends on how close its self-assessment is to the ESC's rating.[57] • Reputational – The rating is public and provides a clear evaluation of the company's value proposition, also facilitating comparisons between companies. • Procedural – In addition to being ambitious, companies are encouraged to make their submissions clear and well-supported by evidence to access a streamlined review process.
Regime type	**Type of price control** The ESC describes the form of price control as the approach that a water business takes to translate its revenue requirement into customer prices and a tool for ensuring that the business achieves sustainable revenue streams over the regulatory period.[58] While companies are required to clearly indicate the proposed form of price control for each service they provide and how this meets the pricing requirements set out in the Water Industry Regulatory Order (WIRO),[59] different forms of price control are allowed within the regulatory framework,[60] including individual price caps, revenue cap, weighted average price cap (price basket), weighted average revenue (revenue yield), or hybrids.[61] The ESC has provided some guidance in relation to the businesses' demand forecasts, which contribute to determining their opex and capex forecasts, as well as the prices proposed by the businesses to recover the revenue required over the regulatory period. In assessing price submissions, the ESC expects that a company prepares its demand forecasts by: • developing demand models based on past consumption; • consulting with major water users (e.g. industrial, commercial, and irrigation customers); • formulating population forecasts informed by stakeholders (e.g. councils, regional planning bodies, developers); • and considering the likely impact of changes in tariffs, economic conditions, and water conservation initiatives such as per capita use targets, water conservation and education campaigns, the use of water efficient appliances, and potable substitution from water recycling.[62]

[54] ESC (2016c), p. 4.

[55] ESC (2016c), p. 8.

[56] ESC (2016c), p. 11.

[57] ESC (2016c), p. 12.

[58] ESC (2016c), p. 32.

[59] ESC (2016c), p. 32. These requirements are further discussed below, in the 'Pricing' section of the case study.

[60] ESC (2016c), p. 59.

[61] ESC (2016c), p. 33.

[62] ESC (2016c), p. 30-32.

Topic	Details
	Demand forecast In the lead-up to the introduction of PREMO, the ESC noted that under the price cap form of price control used by most Victorian water businesses, a company has an incentive to underestimate its demand forecast to gain from higher maximum prices.[63] To address this, the ESC proposed a demand model where the ESC would adopt the company's demand forecast subject to minimal scrutiny. With demand up to this forecast level, a price cap would apply, with the prices submitted by the company. With demand above the forecast level, a revenue cap would apply. However, the business would also be able to propose a buffer, i.e. a mark-up over the proposed price/ revenue cap, to mitigate the uncertainty of the demand forecast. The appropriateness of the buffer would contribute to determine the ESC's rating of the price submission under the Risk element, with companies seeking to transfer risk to customers through a higher buffer likely to incur a lower rating.[64] The ESC's proposed model is not mandatory.[65] **Building block approach** The ESC derives revenue requirements for water businesses using a building block approach, through the following steps: • Considering whether the outcomes that a water business proposes to deliver reflect obligations imposed by the government and the regulator or demonstrated customer needs. • Establishing efficient benchmark levels of forecast opex and capex for the next regulatory period. • Rolling the RAB forward. • Applying a rate of return to the RAB calculated using a benchmark cost of debt (based on a 10-year trailing average approach) and a return on equity that varies across firms depending on their PREMO rating and how accurately the company self-assessed the level of ambition of its proposal. • Establishing a regulatory depreciation allowance. • Establishing a benchmark tax allowance. • Summing the building blocks (operating costs, capital costs, and tax allowance) to determine the revenue requirement.[66]
Industry structure	Victoria's state-owned water sector is made up of 19 water corporations:[67] • Metropolitan water corporations – three retail water companies serving the Melbourne area, plus one wholesaler providing them with bulk water and sewerage services. • Regional urban water corporations – eleven companies which supply regional cities and towns, plus two that provide both urban and rural water services. They provide retail, bulk, and wastewater. • Rural water corporations – Two companies that manage dams and operate irrigation districts.[68] Each company has its own service area, preventing competition between the regulated water businesses.

[63] ESC (2016b), p. 83.

[64] ESC (2016b), p. 84-85.

[65] ESC (2016c), p. 32.

[66] ESC (2016d), p. 7-9.

[67] Victoria State Government, https://www.water.vic.gov.au/water-industry-and-customers/water-corporations. Accessed 18 May 2020.

[68] Farrier Swier (2019), *Victoria's water sector: The PREMO model for economic regulation*, prepared for the ESC, March, p. 2-3.

Topic	Details
	These companies vary considerably in terms of the size of their service area, the services they provide, their customer base, and the nature of their assets. However, all (except Goulburn Murray Water)[69] are regulated under the PREMO framework.
Price control process	The price review process comprises three stages: 1. The ESC evaluates the quality of the price submission and its proposed outcomes and identifies the need for further verification work. 2. The ESC undertakes further review. This may range from simply requesting additional information to commissioning a full review of cost forecasts from an expert consultant. Following the review, the ESC makes a draft decision. 3. Following a public consultation on the draft decision, the ESC makes its final price determination.[70] The ESC has sought to introduce flexibility in the review process by tailoring the scope of its assessment to the quality of each price submission. High-quality submissions can be **fast tracked**, allowing the ESC to place a greater focus on lower-quality submissions.[71] Fast tracking does not depend directly on the PREMO rating, which measures the level of ambition, but rather on the clarity of the proposal and the quality of supporting information. Effectively, a high-quality submission enables the ESC to make an early draft decision, accepting the proposal in its entirety or with minimal changes without undertaking further review. This can also result in an early final decision. Conversely, in extreme cases where it considers that the information provided in Stages 1 and 2 is not enough to make a draft decision, the ESC can reject a submission and ask or a resubmission.[72]
Role of customers and other stakeholders	**Customers** With PREMO, the ESC sought to encourage companies to move away from a 'box-ticking' approach to customer engagement, focusing instead on identifying customers' concerns and priorities and structuring their submissions in terms of outcomes that customers value.[73] Engagement is one of the PREMO elements, meaning that price submissions are rated (and RoE is set) based on, among other things, how the company engaged its customers.[74] This should provide an incentive to undertake effective customer engagement. In its assessment of Engagement, the ESC considers five principles: 1. the form of engagement should be tailored to its content and circumstances; 2. customers should receive appropriate information; 3. engagement should prioritise issues that have a material impact on services and prices; 4. engagement should start early and be ongoing; and

[69] In the 2018 round of price reviews three companies were excluded from PREMO: 1) Melbourne Water, the metropolitan wholesaler, which had already had its price review in 2016; 2) Western Water, a regional business adjacent to Melbourne, which was not assessed under PREMO because it was experiencing high growth levels; and 3) Goulburn Murray Water, a rural water corporation subject to a different regulatory framework and largely governed by Commonwealth rules. See Farrier Swier (2019), p. 41. The PREMO framework will apply to Melbourne Water and Western Water from their next price reviews. See ESC (2019b), *Melbourne Water's 2021 water price review: Guidance paper*, November, p. 2; and ESC (2020), *Western Water draft decision: 2020 Water Price Review*, March.

[70] ESC (2016c), p. 48.

[71] ESC (2016c), p. 47.

[72] ESC (2016c), p. 48.

[73] ESC (2016c), p. ii.

[74] Farrier Swier (2019), p. 52.

Topic	Details
	5. the company should demonstrate in its submission how it has taken customers' views into account.[75] The ESC is not prescriptive on how businesses should engage customers and considers that companies are best positioned to find what works for their customers.[76] However, the ESC recommends that customer engagement should be broad, deep, and start early.[77] A tool developed by the ESC helps businesses describe their customer engagement along these three dimensions:[78] • Content – whether customer engagement only addresses discrete projects, broader price/ service trade-offs, or the whole submission. • Form – whether customers are merely informed or consulted, or instead more deeply involved in developing the submission. Ideally, engagement should empower customer participation. • Timing – whether customers' input is only sought once business plans are largely locked in, or instead before planning has started, or ideally throughout the whole planning and review process. The company's position along these three dimensions determines the rating attributed by the ESC to its customer engagement.[79] **Other stakeholders** The ESC sought stakeholder input for its review of regulatory arrangements in the Victorian water sector, which eventually led to the introduction of the PREMO framework. This included a conference that saw the participation of customer representatives, government departments, the Water Services Association of Australia (WSAA, the peak body for the urban water industry), and water businesses, as well as regulation experts.[80] As part of the review, stakeholders were also invited to provide written submissions.[81] In 2018, the ESC adopted a formal stakeholder engagement framework (covering all sectors regulated by the ESC). The framework includes principles of good stakeholder engagement (e.g. transparency, clarity, and inclusiveness)[82] as well as indicative processes and timeframes for engagement conducted as part of a price review and other regulatory determinations.[83] Stakeholder engagement to inform business plans is largely left to individual companies, although the focus of engagement in the PREMO framework is largely on customers. However, the ESC expects that water businesses consult with stakeholders when preparing their demand forecasts. For example, councils, regional planning bodies and land developers should be consulted about anticipated housing and other growth.

[75] ESC (2016c), p. 16.

[76] ESC (2016c), p. 15.

[77] ESC (2016c), p. 16.

[78] ESC (2016c), p. 16-17.

[79] KPMG (2016b), *PREMO assessment tool*, prepared for the ESC, September, p. 9.

[80] ESC (2016b), p. 6.

[81] ESC (2016b), p. 71-72.

[82] ESC (2018a), *Stakeholder engagement framework: Charter of consultation and regulatory practice*, June, p. 7.

[83] ESC (2018a), p. 13.

Topic	Details
Pricing	**Pricing principles** While the pricing framework allows different forms of price control, companies are required to explain how their proposed form of price control meets the requirements set out in the WIRO, i.e. pricing should: • enable customers to easily understand the prices or how they are calculated, determined or otherwise regulated; • provide signals about the efficient costs of providing services, while avoiding price shocks where possible; and • take into account the interests of customers, including low income and vulnerable customers.[84] In addition to these requirements, the ESC considers a number of tariff principles when assessing price submissions: • Tariff structures and the form of price control should ensure a sustainable revenue stream over the regulatory period. • To avoid cross-subsidies, the revenue recovered from each tariff class should lie between the stand alone cost of serving the customers in that class (upper bound) and the avoidable cost of not serving those customers (lower bound). • Tariff structures should be simple, understandable and cost reflective. The ESC recommends specific structures for certain services. For example, a two-part tariff (fixed + volumetric) for bulk and retail water. • Volumetric charges should be set with regard to long-run or short-run marginal cost, where appropriate. Fixed charges should be set to recover the remaining revenue requirement for the tariff class. • It is up to the company to demonstrate whether locational or postage stamp pricing is more appropriate.[85] Each year, the ESC also sets the maximum prices that water businesses can charge for specific services.[86] **Customer impact** Tariff principles include a 'customer focus and equity' principle. Customers' ability to understand retail tariffs and service offerings and respond to price signals should be taken into account.[87] The WIRO indicates that price shocks should be avoided when possible. For the 2018 price review, the ESC defined a price shock as an increase of greater than 10% in any year for any individual tariff. The ESC indicated that for any proposed increases of over 10% it would consider the merits of the increase with regard to the cost of providing the service and the impacts on customers.[88] When assessing a submission, the ESC also considers whether the proposed form of price control allocates demand and supply risks to the party best able to manage them and how it incentivises the party to reduce the risk or manage it effectively.[89]

[84] Water Industry Regulatory Order (WIRO) 2014, clause 11(d). Victoria Government Gazette, G43, 23 October 2014, p. 2485-2491.

[85] ESC (2016c), p. 36.

[86] ESC, https://www.esc.vic.gov.au/water/water-prices-tariffs-and-special-drainage/water-tariffs/tariffs-victorian-water-businesses, accessed 15 May 2020.

[87] ESC (2016c), p. 36.

[88] ESC (2016d), p. 59, footnote 43.

[89] ESC (2016c), p. 34.

Topic	Details
	If the proposed form of price control shifts risk to the customer base (e.g. through the adoption of a revenue cap without limitations on annual price adjustments), the company may incur a 'basic' rating on the Risk dimension of the PREMO assessment.[90] Mitigation of potential price shocks to customers is also necessary for a submission to receive a 'standard' rating with respect to Management.[91] Any proposed changes to pricing and tariffs should be justified in the price submission, with reference to customer engagement and support.[92]
Approach to assessing efficient and prudent expenditure	**Incentive mechanisms** The PREMO framework is about ensuring that a company's business plan is ambitious in delivering the outcomes and prices that customers value. The ESC considers that a price submission is ambitious, for example, if it proposes targeted services and outcomes at lower prices.[93] An ambitious value proposition is rewarded through a higher RoE. Incentives to drive efficiencies are particularly evident in the Management element of PREMO. To obtain an advanced or leading rating in this area, a business needs to propose an improvement and/ or position itself well above the industry average in terms of cost-efficiency. For the 2018 price review, the ESC considered that in an advanced submission forecast opex would incorporate a rate of efficiency improvement well above the 1% efficiency hurdle used in the 2013 review and/ or the industry benchmark. The ESC also considers proposed improvements in the efficiency of the capex program. Conversely, efficiency improvements below the ESC's expectation for a standard proposal could lead to a basic rating.[94] In their advice to the ESC on the practical implementation of PREMO, KPMG (2016a)[95] considered that it would be inappropriate for the ESC to reward a business for outperforming its PREMO rating by increasing its RoE during the price control, as this would weaken the incentive for the business to make its best offer, in the knowledge that outperformance would be financially rewarded. KPMG also did not consider it desirable to make the regulatory process one of continuous negotiation, as this would make regulatory arrangements more costly and uncertain. An exception to this would be where the company had agreed with its customers a mechanism to reward outperformance and included it in the price proposals. It would also be acceptable to reward outperformance from a company that had initially been penalised for having over-rated its price submission, but later demonstrated a level of performance consistent with its original self-assessment. This would preserve the incentive for good performance for those companies that had their submission 'downgraded' by the ESC. Based on our review, we are not aware of any water companies that have sought a higher RoE as a reward for outperformance within the price control. **Capex** Businesses are required to provide forecasts of prudent and efficient capital expenditure, both on aggregate and by major service category (e.g. water, sewerage, irrigation – depending on the business), for each year of the pricing period. [96]

[90] KPMG (2016b), p. 11.

[91] KPMG (2016B), p. 6.

[92] ESC (2016c), p. 34.

[93] ESC (2016c), p. 9.

[94] ESC (2016d),

[95] KPMG (2016a), *A practical application of the PREMO framework*, September, p. 8-9.

[96] ESC (2016d), p. 36.

Topic	Details
	Capex can be classified as:[97] • Major capital projects – large, discrete capital investment projects. • Capital programs – ongoing capex programs containing multiple projects (e.g. water main renewals or ICT upgrades). The company is required to provide the list of projects included within each program for the next regulatory period.98 • Other capital expenditure – smaller discrete projects and programs, grouped into one or more programs and included under the capital programs list.99 The company must provide certain information for each capex project/ program, including its objective and how it aligns with customer outcomes[100] and the forecasts' methodology and assumptions.[101] Other information requirements vary depending on the classification. For example, major capital projects require risk analysis and a business case describing the alternatives considered and the approach to identifying the optimal solution. For capital programs, companies must present historical costs and explain significant variations in forecast expenditure, the methodology for assessing risk and prioritising projects within the program, and the cost estimation basis.[102] In addition, the company is required to justify its total forecast capex against a number of criteria that reduce the allocation of risks to customers: • project costs are equally likely to be higher or lower than forecast (P50 estimate); • contingency allowances are optimised; • forecast renewal capex incorporates ongoing efficiency; • delay and budget risks are managed through contractual agreements with service providers.[103] In justifying its capex, the company should take into account any relevant industry or economy-wide benchmarks of expenditure.[104] Pricing for the period is determined using the forecast expenditure, but the RAB is updated at the end of the period to reflect the actual expenditure. The true-up is intended to protect businesses and customers from significant changes in capex and businesses do not need to include high contingency allowances or allow capital for speculative projects.[105] However, if the ESC finds that actual construction costs exceed their efficient level, the inefficient expenditure is not rolled into the RAB and is therefore borne by the company.[106] Companies should take into account the possibility to substitute between opex and capex when justifying their capex forecast.[107]

[97] ESC (2016d), p. 37.

[98] ESC (2016d), p. 38.

[99] ESC (2016d), p. 38.

[100] ESC (2016d), p. 37-38.

[101] ESC (2016d), p. 39.

[102] ESC (2016d), p. 37-38.

[103] ESC (2016d), p. 36.

[104] ESC (2016d), p. 39.

[105] ESC (2016c), p. 25.

[106] ESC (2016d), p. 36.

[107] ESC (2016d), p. 39.

Topic	Details
	To determine the revenue requirement, the ESC considers the level of capex that would be incurred by a prudent service provider acting efficiently to achieve the lowest cost of delivering on service outcomes, taking into account a long-term planning horizon.[108] For example, the ESC's decision on Melbourne Water's capex at the 2016 price review was based on a detailed review of a sample of 30 projects, including 15 major capital projects and the top 15 mains renewals allocations.[109] The ESC made reductions to company submitted expenditure on major projects in the sample based on: • The finding that projects were being delivered under budget or did not progress to schedule in the current regulatory period. • A reduction in expenditure for uncertain projects. The ESC argued that if those projects were to proceed, they could be dealt with using a pass-through mechanism or rolled into the RAB with capitalised interest at the end of the regulatory period. • The fact that the ESC considered some cost estimates to be excessive as they were outdated and did not reflect current market conditions.[110] The ESC decided to make a blanket 20% reduction to Melbourne Water's proposed renewals capex to reflect the underspending by Melbourne Water against its forecasts for the current period, and lower contractor prices.[111] Based on the findings in relation to major projects and top renewals allocations, the ESC decided to make an additional 5% reduction to the remainder of proposed capex.[112] The ESC's allowed capex does not represent the amount that the water business is required to allocate to particular projects and, if the ESC makes an adjustment to exclude a project's capital expenditure from the revenue requirement, it is not requiring the business to remove that project. Instead, allowed capex represents the overall level of expenditure that the ESC deems sufficient to operate the business and to maintain or improve services over the regulatory period. It is up to the business to determine how to best manage the allocation of its revenue and prioritise its expenditure within a regulatory period.[113] ESC engaged Deloitte Access Economics to undertake a review of the companies' proposed opex and capex.[114] With regard to the capex assessment, Deloitte Access Economics undertook bespoke assessments and stated that it had regard to the following questions: *"1. Does proposed capex reflect obligations imposed by Government (including technical regulators) or customers' service expectations?* *2. Are proposed new major capital works consistent with efficient long-term expenditure on infrastructure services?* *3. Does the business have appropriate asset planning procedures?* *4. Does the business have appropriate asset management systems in place?*

[108] ESC (2016a), *Melbourne Water price review 2016*, March, p. 41. The ESC used similar language in its 2018 price determinations conducted under the PREMO framework.

[109] ESC (2016a), p. 46.

[110] ESC (2016a), p. 48-49.

[111] ESC (2016a), p. 52.

[112] ESC (2016a), p. 53.

[113] ESC (2016a), p. 46. The ESC used similar language in its 2018 price determinations conducted under the PREMO framework.

[114] See for example, Deloitte Access Economics (2018), *Central Highlands Water – expenditure review for 2018 water price review: Report for the Essential Services Commission – FINAL REPORT*, February.

Topic	Details
	5. Does the business have appropriate project management procedures in place to enable effective delivery of capital works? *6. Has a risk-based approach been adopted to develop the capex program? Is there clear evidence that projects are prioritised?* *7. Are major projects consistent with long-term strategies and planning?* *8. Is the timing for the proposed new capex reasonable?* *9. Are individual project cost forecasts reasonable and do not include undue contingencies or provisions, and reflect current efficient rates for undertaking capex in the Victorian water sector?* *10. Is the capex program deliverable in the timeframes proposed?"*[115] **Opex** Businesses are required to provide forecasts of prudent and efficient operating expenditure, both on aggregate and by major service category, for each year of the pricing period. Opex is further broken down by activity (e.g. operations and maintenance, bulk charges, treatment etc.).[116] Forecast opex must be presented relative to a reference year, typically the last full year of actual data, adjusted to remove non-controllable expenditure, one-off costs, and ongoing efficiency commitments.[117] Changes in forecast opex relative to the reference year, after allowing for customer growth and cost efficiency improvements, must be clearly presented. The company must also explain how these changes translate into customer outcomes.[118] The ESC uses business-as-usual opex in the reference year as a baseline against which proposed opex changes are assessed.[119] The ESC can revise the opex proposal to an amount that better reflects the lowest cost that a prudent and efficient provider would incur in delivering the outcomes specified in its price submission. Deloitte Access Economics also undertook benchmarking between the businesses using opex changes over time, and comparing labour and energy costs. For example, the ESC's decision on Melbourne Water's opex at the 2016 price review was based on the analysis of key drivers of proposed opex increases, including: • The ESC accepted the company's assumptions on some of the major cost drivers, labour and waterways and drainage costs. • The ESC analysed Melbourne Water's energy costs and made a reduction of $100m to the company's proposed costs. Some small reductions were made to reflect expected savings from fleet and chemicals purchases. • The ESC disallowed $5m opex requested for a new pollution response obligation as it considered that Melbourne Water had already been performing that function in the past.[120]

[115] Deloitte Access Economics (2018), page 5.

[116] ESC (2016d), p. 31-32.

[117] ESC (2016d), p. 33.

[118] ESC (2016d), p. 32-33.

[119] ESC (2016a), p. 10. The ESC used similar language in its 2018 price determinations conducted under the PREMO framework.

[120] ESC (2016a), Section 3.5.

Topic	Details
	The ESC's allowed opex represents the overall level of opex that the ESC deems sufficient to operate the business and to maintain services over the regulatory period, rather than the amount that the company is required to allocate to particular activities.[121]
Services and performance	**Regulated services** The WIRO provides a list of declared services in respect to which the ESC has the power to regulate standards and conditions of service and supply. These are: (i) retail water services; (ii) retail recycled water services; (iii) retail sewerage services; (iv) storage operator and bulk water services; (v) bulk sewerage services; (vi) bulk recycled water services; (vii) metropolitan waterways and drainage services; (viii) irrigation drainage services; (ix) connection services; (x) services to which developer charges apply; and (xi) diversion services.[122] This coincides with the list of prescribed services for which the ESC has the power to regulate prices. **Service levels** The ESC issues codes that impose service levels obligations on water businesses. Each company is also required to develop and comply with a customer charter that sets out service standards in accordance with the relevant codes. [123] There are currently three water businesses codes. A customer service code for rural water businesses and one for urban water businesses, which set standards in relation to, among other things, quality and reliability of services, billing, payments, and information the company is required to provide. The code for urban water businesses also sets out obligations around connection and service provision.[124] Another code sets additional obligations on urban water businesses specific to the management of trade waste services.[125] The ESC is currently reviewing the codes. The review covers billing, metering, vulnerable customers, and customer notification. The ESC is expected to issue a final decision in June 2020.[126] **GSL scheme** The ESC requires all water businesses to implement a guaranteed service level (GSL) scheme that establishes payments/ rebates to customers when the company fails to meet specified service standards. The aim of the scheme is for businesses to internalise the cost of investment decisions that leave some customers with poor service. The ESC

[121] ESC (2016a), p. 14. The ESC used similar language in its 2018 price determinations conducted under the PREMO framework.

[122] WIRO (2014), clause 7(a).

[123] ESC, https://www.esc.vic.gov.au/water/codes-and-guidelines/customer-service-codes, accessed 15 May 2020

[124] ESC (2018b), *Rural water customer service code*, August; and ESC (2018c), *Customer service code: urban water businesses*, August.

[125] ESC (2014), *Trade waste customer service code: Victorian urban water businesses*, September.

[126] ESC, https://www.esc.vic.gov.au/water/codes-and-guidelines/customer-service-codes/water-codes-review-2019, accessed 15 May 2020.

Topic	Details
	recommends that businesses should engage with customers to identify which services and guaranteed levels should be covered by the scheme and the amount of the rebates.[127] The ESC suggested that a company can use its GSL scheme to support its rating for the Risk element of PREMO, as the company can use the scheme to take on revenue risk, which would provide an incentive for it to deliver efficient levels of service to customers.[128] **Outcomes and performance** A key objective of the PREMO framework is to ensure that price submissions focus on the customer outcomes that the company proposes to deliver. The ESC considers that outcomes should be derived through customer engagement, tested with customers, and translated into measurable outputs with agreed performance targets.[129] The company should set out these outcomes and the associated targets in its price submission, with the actions it plans to undertake to achieve them, the related costs and cost savings and how they will impact prices. The main opex and capex movements should be linked to proposed outcomes, demonstrating how they improve customer value. [130] Outcomes are one of the five elements of PREMO. The ESC's rating of this area considers how well proposed outcomes are supported by customer engagement, their alignment with forecast expenditure, and whether they are translated into measurable and deliverable outputs.[131] **Performance monitoring** Since before the introduction of PREMO, the ESC issues annual water performance reports.[132] These compare water businesses across a set of common performance measures (e.g. water consumption, typical bills, customer service and reliability), making this information available to customers and other stakeholders.[133] In addition to this process, with the introduction of PREMO the ESC launched a new 'outcomes reporting' process, where each company is required to report annually to customers on its performance, assessing whether it has delivered the outcomes set out in its pricing submission, and providing justifications and plans for addressing any performance shortfalls. This is intended to make businesses more accountable to their customers[134] and has become necessary as under PREMO each company proposes its own set of outputs and associated targets.[135] For 2018-19, the first year of outcomes reporting, businesses were asked to rate their performance against outcomes using a simple traffic light system.[136] The ESC issues an outcomes report on the businesses' self-reporting. The ESC indicated that while its first outcomes report has been mainly to provide a summary of the self-assessments, in the future these reports will provide more commentary on the businesses'

[127] ESC (2016c), p. 21.

[128] ESC (2016d), p. 28.

[129] ESC (2016c), p. 19.

[130] ESC (2016c), p. 19-20.

[131] KPMG (2016), p. 5.

[132] ESC, https://www.esc.vic.gov.au/water/sector-performance-and-reporting/water-performance-reports#tabs-container2. Accessed 18 May 2020. Water performance reports from 2007-08 on are available on the website.

[133] ESC (2019a), *Outcomes report 2018-19: Performance of Victoria's water businesses against their own commitments to customers*, November, p. 3.

[134] ESC (2016c), p. 22.

[135] ESC (2019a), p. 3.

[136] ESC (2019a), p. 2.

Topic	Details
	performance, with potential implications for their rating on the Performance element of PREMO at the next price review.[137] **Performance incentive** The Performance element of PREMO, which contributes to determining the company's regulated RoE, is a backward-looking assessment of how a business performed against its agreed outcomes over the previous price period. [138] This should provide a direct performance-based incentive. The ESC suggests that the business itself could decide to set lower prices than the maximum approved by the regulator, to recognise that it is not delivering what it has proposed in its submission. This type of arrangement may be discussed in advance in the price submission itself.[139] The ESC may also step in to correct prices within a regulatory period if it considers that the business is not delivering its proposed outcomes and has not adequately addressed this by itself. In this case, the ESC would lower the PREMO rating, and consequently the allowed RoE and prices for the remainder of the period. The ESC may also include in this decision conditions that, if met, would allow the company to apply to have its rating restored.[140]
Competition	We could not find relevant information for this question. This implies limited competition in this sector in Victoria.
Other incentive mechanisms	Companies can propose their own incentive mechanisms if these have the customers' support. This could include, for example, within-period rewards for outperformance[141] as well as lower prices to compensate customers for underperformance. [142] GSL schemes are also largely designed by the businesses.[143]
Protecting the environment	Victorian legislation stipulates that the objectives of the ESC in relation to the water industry include ensuring that *"regulatory decision making has regard to the health, safety, environmental sustainability (including water conservation) and social obligations of regulated entities."*[144] And when making price determinations, the ESC must have regard to: *"the efficient costs of producing or supplying regulated goods or services and of complying with relevant legislation and relevant health, safety, environmental and social legislation applying to the regulated industry".*[145] Statements of obligations issued by the Victorian Minister for Water set out some responsibilities of water businesses in relation to environmental policies. For example, a 2015 statement of obligations requires that water companies comply with any guidelines

[137] ESC (2019a), p. ii-iii.

[138] ESC (2016c), p. 10, footnote 12. Since the assessment of Performance is backward-looking, this element was not evaluated in the 2018 price review and will only come into effect for the next review cycle.

[139] ESC (2016c), p. 22.

[140] ESC (2016c), p. 43.

[141] KPMG (2016a), p. 8.

[142] ESC (2016c), p. 22.

[143] ESC (2016c), p. 21.

[144] Water Industry Act 1994, Section 4C(c).

[145] Essential Services Commission Act 2001, Section 33(3)(b).

Topic	Details
	issued by the Department for forecasting the impact of climate change on water supplies, setting out future climate scenarios and projections of rainfall, runoff and inflows. The same statement requires that each company develops a Drought Response Plan for urban systems.[146] In the PREMO framework, environmental considerations that are important to customers can be proposed as outcomes and, like other outcomes, are considered by the ESC with regard to their impact on costs and customer value. In the 2018 price review, the ESC appears to have considered and allowed a range of environment-related outcomes proposed by water businesses. Most of the regulated water companies have committed to outcomes related to the environment, liveability, and water cycle management.[147] In its review of the PREMO model, farrierswier (2019) also noted that following the introduction of PREMO water businesses committed to a diverse range of improved service outcomes, including upgrading water and sewerage networks to address population growth and climate change.[148]
Vulnerable customers	Consideration of low income and vulnerable customers is one of the pricing principles set out in the WIRO. In addition, all urban water businesses are subject to a mandatory GSL aimed at preventing water businesses from restricting supply to customers in financial hardship.[149] To avoid the GSL payment, a company must take (and be able to document) a series of steps before restricting a customer's water supply and commencing legal action. The checklist of 'reasonable endeavours' includes issuing a reminder and then a warning, attempting personal contact, and providing information on payment assistance.[150] The checklist is under review.[151] In its review of the PREMO model, farrierswier (2019) also noted that following the introduction of PREMO water businesses committed to extending support for vulnerable customers.[152]
Maintaining economic and financial sustainability	**Financial sustainability of regulated utilities** The WIRO requires the ESC to have regard to the financial viability of the regulated water industry.[153] The ESC has a financial viability test to assess whether regulated prices would leave the business financially unviable. The test uses four indicators commonly used by rating agencies: gearing, Funds from Operations (FFO) / Net debt, internal financing ratio, and FFO interest cover. The first three are used by the ESC to determine whether an adjustment is necessary to a business's prices. The FFO interest cover, a measure of the business's cash flow buffer, is used to determine the size of adjustment.

[146] Minister for Environment, Climate Change and Water (2015), *Statement of obligations (general)*, December, part 6.

[147] ESC (2019a), 'Water business summaries' Section, p. 17-36.

[148] Farrier Swier (2019), p. 28.

[149] ESC (2016c), p. 21, footnote 14.

[150] ESC (2015), *Check-List for Minimum "reasonable Endeavours" – Hardship Related GSL*, February.

[151] ESC, https://www.esc.vic.gov.au/water/codes-and-guidelines/customer-service-codes/water-codes-review-2019. Accessed 19 May 2020.

[152] Farrier Swier (2019), p. 28.

[153] WIRO (2014), 8(b)(ii).

Topic	Details
	The four indicators are calculated in the financial model developed by the ESC and populated by the businesses to determine their revenue requirements. The indicators are assessed against indicative ranges.[154] **Price adjustment mechanisms** Prices can be adjusted on an annual basis in response to uncertain or unforeseen events. In 2013, the ESC's price determinations included mechanisms to allow price adjustments to take into account uncertain and unforeseen events, desalinisation costs different than forecast, and a pass-through of changes in certain costs, such as taxes. The ESC maintained these arrangements in 2018.[155] The framework allows companies to propose pass-through or price adjustment mechanisms to address other events, but these must be clearly justified. Examples include policy/ regulatory change and anticipated but not fully scoped capital projects.[156] The ESC evaluates the proposed mechanism taking into account the appropriateness of the risk allocation, the extent to which the event is outside of the business's control and whether the business could manage risk otherwise.[157]
Any other relevant points	Victorian water companies are state owned, and their incentives might differ to those of a privately owned company. Unlike state owned companies, a privately owned corporation has an incentive to increase profits to maximise shareholder value. Another difference is that a private company could reward its management for good performance, while the remuneration of the management of the Victorian water companies is controlled by the state government.[158]
How does the regulator measure success?	In 2018, the ESC engaged consultants farrierswier to conduct an independent review of PREMO to provide a public record of the development and implementation of the framework and an early assessment of its outcomes.[159] The conclusions of the review were generally positive. The review found that PREMO incentivised water businesses to be more ambitious and gave stronger emphasis to customer engagement. The 2018 price review was also characterised by a general reduction in prices, in contrast with previous reviews. Most companies committed to opex efficiency improvements and offered some improvements in service outcomes. However, the review highlighted mixed views on whether the greater autonomy afforded by the new framework had been beneficial to all businesses and on the extent to which the objective of greater simplicity in the price review process was achieved.[160]

[154] ESC (2016c), p. 44-45.

[155] ESC (2016d), p. 59-60.

[156] ESC (2016d), p. 60.

[157] ESC (2016d), p. 61.

[158] PwC (2017), *Refining the balance of incentives for PR19*, prepared for Ofwat, June, p. 128-129.

[159] farrierswier (2019), p. vi.

[160] farrierswier (2019), p. vii-viii.

Appendix B ESSENTIAL SERVICES COMMISSION OF SOUTH AUSTRALIA (ESCOSA)/ WATER

Topic	Details
Overview	The regulation of water in South Australia is characterised by two separate approaches. The first applies to major retailers, only SA Water at present. The second applies to several minor and intermediate water retailers, which have less than 50,000 connections.[161] The regulatory regime's requirements for minor and intermediate retailers is less prescriptive than that applying to SA Water. The current South Australian water regulatory framework is underpinned by the Water Industry Act 2012 (the 'Act').[162] The Act has three key aspects: • **Licensing:** Any entity wishing to provide retail services in SA is required to obtain a license from the Commission. This includes regulatory obligations for achieving minimum standards of service, maintaining dispute resolution processes and complying with industry codes. • **Consumer protections:** The Commission maintains a consumer protection regime including binding service standards, billing, payment, disconnection/flow restrictions and contractual maters. • **Pricing:** The Commission undertakes independent price regulation. The Act sets out that the promotion of efficiency, competition and innovation in the water industry are key objectives. The Act required the development of a third-party access regime, which was established in 2016.[163] The regime provides a framework for third parties to negotiate access to specified water and sewerage infrastructure services provided by SA Water. The Essential Services Commission Act (ESC Act) provides the Commission's primary objective as the "protection of the long-term interests of South Australian consumers with respect to the price, quality and reliability of essential services." This applies to their regulation of the water industry.
Regime type	The overall regime type varies between SA Water and minor and intermediate water retailers: • SA Water is regulated under a building block revenue cap approach. • Minor and intermediate water retailers must receive a licence from the Commission. There is no revenue determination but entities must submit annual self-assessments demonstrating that they meet a set of pricing principles. Prior to SA Water's 2016 determination, SA Water was regulated under an average revenue cap. This varied SA Water's revenue on a dollar per unit basis (kL for water and connections for sewerage). The Pricing Order for the 2016 determination, made by the Minister, required that a revenue cap be established instead of an average revenue cap. As it was outside the Commission's remit to decide the form of control it did not fully debate the relative merits of an average revenue cap compared to a revenue cap. None the less, the Commission did consider the change in terms of whether customers or SA Water faced demand risk.[164] The Commission considered that as a principle demand risk should rest with SA Water rather than its customers as it is cheaper for SA Water to manage this risk. This is because SA Water can manage this risk through setting prices. None the less, a mechanism

[161] ESCOSA (2015a), *Economic regulation of minor and intermediate water retailers*, July.

[162] ESCOSA (2012), *Economic Regulation of the South Australian Water Industry-Final Advice*, June.

[163] ESCOSA (2019), *2019 Review of Water Third Party Access Regime*, May.

[164] ESCOSA (2016), *SA Water Regulatory Determination 2016 – Final determination*, June, pg. 51.

Topic	Details
	that fully adjusted revenue for volume changes would be an average revenue cap which is precluded by the Pricing Order. The Commission instead adopted a demand variation mechanism, which had 50:50 sharing (described in more detail below). This allocates a portion of the demand risk to SA Water.
Industry structure	The retail water industry in South Australia is made up of government-owned corporations (such as SA Water), local councils and private companies.[165] All types of retailers must apply for a licence or an exemption from the Commission. The vast majority of customers are supplied by SA Water which serves 1.6 million customers. [166] Around 88,000 customers are served by a further 58 councils and 19 private organisations. .[167] SA Water is wholly owned by the Government of South Australia established under the South Australian Water Corporation Act (1994). SA Water's primary functions are to provide services for the supply of water by means of reticulated systems, for the storage, treatment and supply of bulk water and for the removal and treatment of sewage..
Price control process	The price control process varies between SA Water and minor and intermediate water retailers. **SA Water** The overall approach taken for each of the last three determinations has been to establish a 'Framework and Approach' first and then proceed with the determination. For 2020, there was a draft Framework and Approach which went out for consultation as well as a final version. In addition, the Commission released several guidance papers on different aspects of the regulatory framework to assist stakeholders. Similarly, the Regulatory Determination had an initiation stage, first consultation stage, draft stage, second consultation stage and final determination. For the 2020 process, the Commission focused on formalising the involvement of stakeholders, which is described in the role of customers section below. **Minor and intermediate water retailers** The price control process for minor and intermediate water retailers is much more 'light-touch'. These retailers must apply for a retail licence which goes out for a round of public consultation. Each year retailers are required to assess their compliance against each of the relevant pricing principles. Retailers are required to assess whether they are fully-compliant, partially-complaint or non-complaint with each principle.[168] If a retailer assesses themselves as not fully-compliant they must describe the steps they will take to transition towards compliance or reasons why compliance is not achievable in the short-term.
Role of customers and other stakeholders	**Customer engagement** The role of customer engagement and incorporating customer preferences is less explicitly set out for minor and intermediate retailers. This is not the case for SA Water where the Commission has put substantial emphasis on this issue. The most recent Framework and Approach for SA Water's 2020 Regulatory Determination stated that one of its aims was to ensure that SA Water understood what customer's value and developed proposals that responded to these needs. The Commission concluded that on previous occasions there was a lack of involvement of customers in the decision-making process.[169] The aim was to add structure and allow the customer perspective to better inform the Commission's determination. The figure below sets out the overall structure.

[165] List of organisations can be found at ESCOSA, Licence/Exemption register.

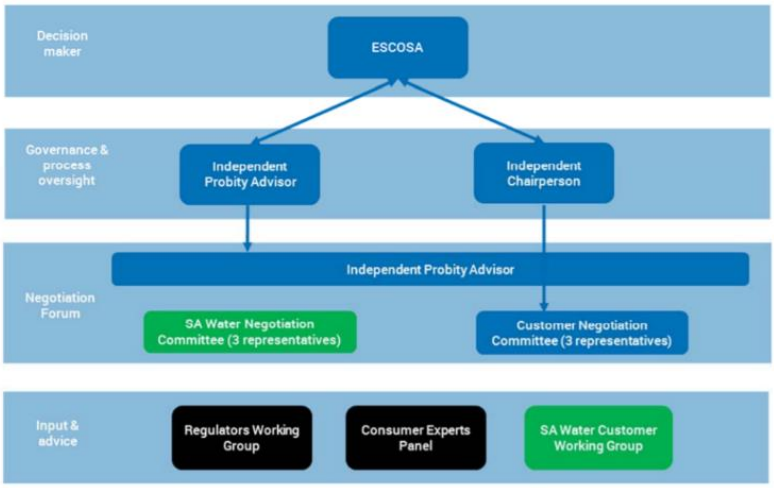
[166] SA Water (2017), *2016-17 South Australian Water Corporation Annual Report*, September.

[167] ESCOSA (2015a), July.

[168] ESCOSA (2015b), *Water Regulatory Information Requirements for Minor and Intermediate Retailers*, September.

[169] ESCOSA (2018a), *SA Water Regulatory Determination 2020 – Framework and Approach*, July.

Figure B.1: ESCOSA stakeholder management structure



Source: ESCOSA (2018), SA Water Regulatory Determination 2020 – Framework and Approach*, July.*

The Framework and Approach established a framework for engaging customers, the main features included:

- The Commission released nine guidance papers on key elements of the regulatory framework intended to assist those wanting to participate in the process.
- A Customer Negotiation Committee (CNC) was established with the goal of representing all SA Water's customers and challenging and negotiating SA Water's business plan prior to submission to the Commission. This is led by an Independent Chairperson and consists of one member appointed from the Consumer Experts Panel and another from SA Water's Customer Working Group.[170]
- The Commission required that SA Water convene a Negotiation Forum. This comprises of the CNC and a three-member SA Water Negotiation Committee. An Independent Probity Advisor, appointed by the Commission, provides oversight of the forum.

Members of the existing Commission's Consumer Advisory Committee and SA Water's Customer Advisory Groups were invited to join the Consumer Experts Panel. The Consumer Experts Panel released a Priorities Report, which set out the key issues of members of the Panel and provided guidance to the Customer Negotiation committee on matters they might want to consider.[171] Following the Priorities Report, SA Water met with the Consumer Experts Panel and summarised the discussions in a public response.[172]

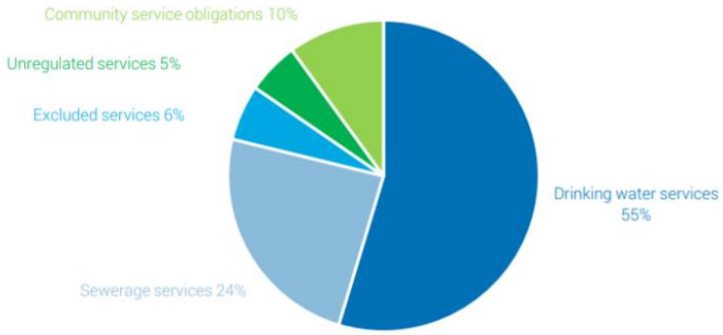
The Commission stated in their Framework and Approach that the "*negotiation process is non-binding and will inform the Commission's determination*".[173] The Commission remains responsible for making a regulatory determination that best serves consumers' long-term interests. None the less, where issues have been successfully negotiated and are consistent with Commission guidance the Commission is likely to accept or give significant weight to these when making its determination.

The 2020 Draft Determination concluded that stakeholders generally supported the new determination process, although there could be areas of improvement:[174]

- The customer challenge process should occur over a longer period.
- SA Water could consult earlier and more extensively with the community on the development of new initiatives.
- There should be greater transparency over SA Water's long-term plans.

Regulators' Working Group

The Commission established a Regulators' Working Group (RWG) to provide a forum for the various regulators of SA Water to coordinate their efforts through a joint planning approach.[175] The regulators included the Commission, the Environment Protection Authority, SA Health, the Technical Regulator, the Department of Environment and Water and Consumer and Business Services. This was in addition to steps taken during the previous determination process (SAW RD16) where the Commission met with regulators quarterly and requested public submissions from regulators which set out the extent to which SA

Topic	Details
	Water's proposal reflected their requirements. For the most recent determination, SA Water was required to provide briefings to the group on various aspects of its strategy, performance and future plans. In turn, the RWG aimed to ensure that minimum service standards or requirements were clearly communicated to SA Water and other members of the Negotiation Forum. There is evidence of the impact of the RWG in SA Water's draft determination published by the Commission. For example, the section on new capital expenditure proposals included a sub-section assessing how well the proposal met RWG requirements. The Commission intends for the RWG to continue throughout the 2020-2024 regulatory period to jointly monitor, evaluate and report.
Pricing	**SA Water** There are three types of services provided by SA Water: • **Regulated direct control services:** These include the sale and supply of drinking water services and the sale and supply of sewage services. • **Regulated excluded services:** This mainly relates to the sale and supply of recycled water but does include other services (e.g. trade waste services and meter services) • **Unregulated services:** SA Water provides some unregulated services such as lab services, soil and sand testing and project management. SA Water's drinking water and sewerage services are regulated under a four-year revenue cap. SA Water's recycled and other excluded services are regulated using a pricing principles approach. This includes a dispute resolution process for customers.[176] The State Government subsidises certain non-commercial services provided by SA Water. The majority of the subsidy relates to allowing SA Water to charge the same drinking water and sewage prices to metropolitan and regional customers. The figure below provides a budget breakdown between the different types of services. *Figure B.2: SA Water budget 2017-18*  *Source: ESCOSA (2018), Guidance paper 2 – SA Water's revenues and prices.*

[170] https://watertalks.sawater.com.au/phasethree/news_feed/the-customer-working-group

[171] SA Consumer Experts Panel, SA Water Regulatory Determination 2020: Priorities Report.

[172] SA Water (2019), *SA Water Regulatory Determination 2020: Priorities Report*, letter dated 18 July 2019.

[173] ESCOSA (2018a), July, pg. 3.

[174] ESCOSA (2020a), *SA Water Regulatory Determination 2020 – Public*, March.

[175] ESCOSA (2018a), July.

[176] ESCOSA (2018a), July.

Topic	Details
	ESCOSA applies National Water Initiative's (NWI's) pricing principles for excluded retail services and recycled water.[177] **Small and intermediate water retailers** In 2012, the Commission considered the form of regulation of licensees providing drinking water and sewerage services other than SA Water.[178] It sought to balance the benefits of price regulation with the costs of regulation. The Commission concluded that it would adopt a set of pricing principles and undertake price monitoring for these licensees. In June 2013, the Commission made a Price Determination requiring intermediate and smaller water retailers to apply the National Water Initiative (NWI) Pricing Principles.[179]
Approach to assessing efficient and prudent expenditure	The Commission considers expenditure for an activity to be prudent if there is a *"clear justification of that activity"*. This is informed by whether it is driven by:[180] • A legislative or regulatory requirement. • An expectation that the activity will deliver benefits to consumers that outweigh costs. • A clear expectation from customers that an outcome should be achieved and that they are willing to pay for that outcome. Expenditure is likely to be considered efficient where it *"represents the lowest sustainable (or 'long-term') cost of achieving the intended outcome".* The Commission identified four high-level drivers of SA Water's expenditure: State Government policy, minimum service requirements, financing costs and customer driven initiatives. The later of these allows SA Water to propose additional initiatives beyond the minimum regulatory requirements though these currently represent a small proportion of SA Water's total expenditure.[181] This sub-section sets out four key features of how the Commission considers SA Water's expenditure: • The process the Commission followed so far for setting SA Water's operating and capital expenditure for the next regulatory determination. • Two interesting features of the regime: the contingent project review mechanism and demand variation adjustment mechanism. • The Commission's view of how risks are shared between SA Water and customers. **Operating and capital expenditure:** The Commission sets out its process for assessing operating and capital expenditure for SA Water in a recent draft determination.[182] The first step is to establish an efficient base year for operating expenditure. This involves picking an actual year for SA Water's operating expenditure and adjusting this for one-off or abnormal costs or savings. This process starts with SA Water proposing a base year and adjustments and the Commission responding. The second step is to make incremental adjustments to the base year value that are relevant going forward. As an example, for the next regulatory period the Commission proposed an adjustment to electricity costs to recognise a forecast reduction in electricity prices between the base year and the next regulatory period.

[177] ESCOSA (2020b), *SA Water Regulatory Determination 2020 – Draft Determination: Statement of reasons*, March, page 35.

[178] ESCOSA (2012), *Economic Regulation of the South Australian Water Industry – Final Advice*, June, pg. 73.

[179] ESCOSA (2015), pg. 27.

[180] ESCOSA (2018b), *Guidance Paper 4 – Prudent and efficient expenditure*, November.

[181] ESCOSA (2018c), *Guidance Paper 3 – Service standards*, November.

[182] ESCOSA (2020b).

Topic	Details
	In the third step, the Commission evaluated requests for additional operating and capital expenditure for the next regulatory period. SA Water characterised their proposals under four key investment drivers: external responsibilities, sustaining services, improving services and enabling growth. The Commission evaluated the proposals under these drivers. Highlighting some of the high-level considerations of the Commission under each of these drivers: • **External responsibility:** This included investments to meet SA Water's legal and regulatory responsibilities. To evaluate these investment drivers the Commission drew on expertise from the Regulators Working Group (for example the Technical Regulator) and independent advice. • **Sustaining services:** SA Water characterised these investments as a way of sustaining reliable services. The Commission was critical of SA Water's approach stating it had failed to demonstrate that some of the proposed expenditure increases were justified relative to what it should be carrying out as part of 'business as usual'. • **Improving services:** These are investments SA Water characterised as improving services in response to customer feedback. SA Water included evidence for the willingness of customers to pay for these improvements, for example for improved water quality. None the less, the Commission disagreed with some of these proposals citing a lack of long-term plan and limited incremental improvements at high cost per customer. • **Enabling growth:** SA Water characterised these investments as serving new water and sewage customers and increasing services available to existing customers. The Commission rejected several of these proposals as SA Water had not demonstrated the financial viability of certain projects heavily dependent on revenue from individual large customers. In a fourth step the Commission considered additional IT expenditure separately. The Commission based its conclusion on an assessment of prudency of IT projects undertaken by a consultant. This included an efficiency adjustment based on a sample of IT capital expenditure. The fifth step is to apply an efficiency challenge. The Commission considered two areas. The first included specific adjustments for capital program expenditure (based on consultant's findings) and operating expenditure (to embed specifically identified IT-enabled business efficiencies). The second included an ongoing efficiency factor "in line with the wider Australian economy", which was set at 0.5%. **Contingent project review mechanism** The contingent project review mechanism allows drinking water and sewage revenue caps to change to include prudent and efficient expenditure on predetermined projects.[183] These predetermined projects were not included in the regulatory determination due to timing or cost uncertainties. The intention is to ensure that a process of consultation and regulatory review occurs once the probability of the project and its expected costs become known but before investment is committed. **Demand variation adjustment mechanism** The demand variation adjustment mechanism allows revenue caps to be adjusted to reflect any material difference between forecast and actual drinking water demand and sewage connections.[184] The mechanism incorporates 50 percent of additional/reduced revenue based on efficient costs in the revenue cap of the subsequent regulatory period. The threshold to trigger a revenue adjustment is one percent of revenue. The mechanism to equally shares demand risk between SA Water and its customers. **Sharing between customers**

[183] ESCOSA (2020b).

[184] ESCOSA (2020b), March.

Topic	Details

The Commission highlights a critical feature of economic regulation is the allocation of risk between providers and customers.[185] The Commission's views on how certain risks are shared between SA Water and its customers are shown in the table below.

ESCOSA's views on risk allocation

Risk	Summary of Commission's view
Demand risk	Demand risk is shared between SA Water and its customers through revenue caps and the demand variation adjustment mechanism. SA Water does not face significant long-term demand risk under revenue cap regulation.
Input price risk	Customers face the majority of input price risk as SA Water can recover its efficient costs. However, SA Water may still face some price risks where SA Water cannot influence the input price, hedge or seek a cost pass-through.
Cost volume risk	Customers face the majority of input price risk as SA Water can recover its efficient costs. SA Water may still face cost volume risk where cost impacts are not sufficient to trigger a cost pass through.
Supplier risk	Customers should not face the risk of supplier which SA can mitigate. SA Water should mitigate this risk through its contractual arrangements and effective contractor management.
Inflation risk	Customer's largely face inflation risk as SA Water's prices are adjustment each year for actual inflation.
Competition risk	Should SA Water lose significant revenue from a competitor they will be able to recover fixed costs from remaining customers. As a monopoly supplier SA Water faces little competition risk, though it may face some competition under the third-party access regime.
Stranding risk	Stranding risk is passed on to customer by allowing SA Water to recover past efficient capital expenditure through prices.
Political/regulatory risk	Independent economic regulation is intended to address this risk.
Other business risk	This includes unforeseen events such as natural disasters. The presence of a cost pass-through mechanism abates this risk for SA Water.
Refinancing risk	The risk that a debt portfolio is not easily re-financed. SA Water must manage this risk and if it is unable to refinance debt than equity holders may face the risk. Some of this risk may be passed onto customers as customers must pay efficient financing costs, which may increase due to illiquid markets.
Interest rate risk	The risk of a large sudden movement in the cost of debt. The annual update process lowers the risk to SA Water. The regulatory cost pass through mechanism also exists.
Default risk	The risk that cash is not available to service short-term obligations. The maximum revenue seeks to ensure sufficient cash flow. The annual update process mitigates this risk. In addition, SA Water has various tools to mitigate short-term cash flow risk.

[185] ESCOSA (2018d), *Guidance Paper 2 – SA Water's revenues and prices*, November, pg. 12.

Topic	Details	
	Financial counterparty risk	The risk that third parties fail to honour their obligations, for example insurance, hedging and currency swaps. SA Water's revenues may have to rise if there is a default.
	Source: ESCOSA (2020), SA Water Regulatory Determination 2020 – Draft Determination: Statement of reasons*, March.*	
	With regard to expenditure more broadly, SA Water retains/ bears and over-/under-spend within the period.	
Services and performance	The Commission's licensing and economic regulatory role is limited to those entities that provide or seek to provide "water retail services". The Commission assesses and provides licenses authorising entities to provide retail services. The Act defines these as: • The sale and supply of water to a person for use…where the water is to be conveyed…by a reticulated system; or • The sale and supply of sewage services for the removal of sewage. The Commission sets service standards for each of the Licensees it regulates. The Commission applies two sets of service standards, one for major retailers (SA Water) and one for minor and intermediate retailers. Licensees are required to adopt a "*best endeavours*" approach to meeting their service standard performance targets. The Commission has defined best endeavours as: [186] *"to act in good faith and use all reasonable efforts, skill, and resources to achieve an outcome in the circumstances"* **SA Water** Since 2013 the Commission has adopted a staggered approach to setting SA Water's service standards. The service standards in the initial regulatory period, 1 January 2013 to 30 June 2013, were set at the level achieved by SA Water at the time. In subsequent determinations, the Commission has re-considered the service standards within the context of determining prices. SA Water's current service standards cover several areas including customer service and complaint handling, connection services, field crew attendance at the site of service issues and service restoration and clean-up.[187] SA Water is required to report on a quarterly basis while small and intermediate water retailers report on an annual basis. ESCOSA expected that SA Water would propose a set of service standards.[188] The service standards SA Water proposes can be different from the existing service standards. The Commission set an expectation that there is evidence from customer engagement supporting the inclusion of each service standard. This includes: • Demonstrating engagement with customers on a range of service levels. • Demonstrating it has engaged with customers on the associated costs of each service level • Quantified the willingness to pay of customer for those service levels.[189] The Commission also expected evidence that the proposed service standards are tested in the Negotiation Forum.	

[186] ESCOSA (2012), June, pg. 53.

[187] ESCOSA (2016a), *Schedule 1: Service Standards*.

[188] ESCOSA (2018c), November.

[189] ESCOSA (2018c), November.

Topic	Details
	The Commission set out several areas that SA Water should consider for the next regulatory period:[190] • Whether service standards related to underlying network performance (incidence and duration of interruptions) should be introduced. • Whether service standards should continue to recognise responsive (e.g. timeframes for complaint response) or focus on customer satisfaction measures. • Whether to introduce a financial incentive/penalty scheme for meeting service standards or introducing Guaranteed Service Level payments. In their draft business plan SA Water proposed new service standards including: • customer satisfaction; • resolution of customer complaints on first contact; • timeliness of complaint resolution; • escalation of customer complaints to the Energy and Water Ombudsman SA (EWOSA); and • frequency of water interruptions for the worst served customers.[191] In addition to these the Commission proposed additional service standards linked to new expenditure proposed by SA Water. This included additional standards on water network interruptions, improvements to water quality (above the minimum required by SA Health) and sewer overflows (above the requirements set by the EPA). In its draft decision, ESCOSA has set 33 service standards that SA Water is required to meet. **Minor and intermediate retailers** The Commission stated that their objective was to develop service standards for other licensees with regard to the scale and scope of their operations.[192] This means that standards may vary between entities. Minor and intermediate retailers are required to report on an annual basis. The reporting requirements are set out in Water Industry Guideline No. 3.[193]
Competition	There are several smaller entities in South Australia providing drinking water, non-drinking water and sewage services.[194] Their activities are supported by the third-party access regime. The Act sets out a framework for third parties to negotiate access to specified water and sewerage infrastructure services provided by SA Water. In July 2016, a regime was established bringing the framework in the Act into effect. The regime establishes a "negotiate-arbitrate" framework for those seeking access. It requires SA Water to provide information to access seekers on a non-discriminatory basis. If parties cannot agree on the terms and conditions of access a party may refer the dispute to the Commission, which will seek to resolve the dispute by conciliation. If the dispute cannot be resolved the Commission may refer it to independent arbitration. Parties involved in an access dispute may appeal an arbitrator's 'award' to the Supreme Court.

[190] ESCOSA (2018c).

[191] ESCOSA (2020a), page 6.

[192] ESCOSA (2012), June, pg. 61.

[193] ESCOSA (2018c).

[194] ESCOSA (2016b), Issues Paper – Inquiry into regulatory arrangements for small-scale water, sewerage and energy services, August.

Topic	Details
	It is not mandatory for access negotiations to proceed through the process and there is recognition of commercially negotiated access contracts between SA Water and other entities in the regime. The regimes objectives are to: • Promote the economically efficient use and operation of, and investment in, significant infrastructure so as to promote effective competition in upstream and downstream markets; and • Encourage private sector participation in the South Australia water industry. The regime applies in full to some parts of SA Water's infrastructure and 7 pipelines are "declared infrastructure" for these purposes. The regime applies partially to other infrastructure (such as SA Water's bulk sewage and local sewage networks). Access seekers for partially covered services are not afforded the same level of protection, for example disputes about the terms and conditions of access cannot be referred to the Commission for conciliation. The price for access is calculated using SA Water's state-wide retail price minus SA Water's avoidable costs for the designated services plus any facilitation costs associated with the provision of the designated services. The Commission undertook a review of the regime in May 2019 and concluded that the regime should continue for a further five-year period. The Commission found there was low regulatory cost of having a backstop where access negotiations are likely to be infrequent. However, the Commission identified two factors which might be hindering the effectiveness of the regime: • The access regime delivers access prices which are generally close to SA Water's state-wide retail price and may diverge from the efficient local cost of supply. • There is no formal mechanism for access seekers to apply to have water and sewage infrastructure covered under the regime.
Other incentive mechanisms	We did not identify other relevant incentive mechanisms.
Protecting the environment	The Commission states the Act provides no express remit to take account of environmental concerns in a general sense.[195] The Commission does however have an obligation to take account of the prudent and efficient costs of meeting legal environmental obligations. In addition, if SA Water delivers an environmental program but has no legal requirement to do so than SA Water or other respondents can make a case to proceed if: • "The costs of that program are in the long-term interests of SA consumers; and • [costs] ought to be recovered from water customers; and • …costs associated with it are prudent and efficient." The Commission states *"it is not appropriate for an economic regulator to make policy decisions on matters falling outside its role and expertise".* None the less, the recent draft determination for SA Water included new service standards proposed by the Commission that included an environmental dimension.[196] For example, a target to be developed for sewer overflows to the environment above the legally required standard. These service standards were proposed in response to SA Water's proposals to undertake new investments in these areas. This was supported by SA Water's customer engagement finding that customers were willing to accept the cost of reducing sewer overflows.

[195] ESCOSA (2012), pg. 16.

[196] ESCOSA (2020b), March.

Topic	Details
Vulnerable customers	**SA Water** The Act requires the establishment of a consumer protection framework.[197] There are two Water Retail Codes, one for *"major retailers"* (applying to SA Water only) and one for *"minor and intermediate retailers".*[198] All water retailers must also abide by the customer hardship policy in respect of residential customers as published by the Minister. The Code for major retailers includes: • Standard form customer sales contracts. • Customer charter – minimum information provision requirements about the rights and obligations of retailers, customers and tenants. • Enquiry, complaint and dispute resolution procedures. • Hardship programs. • Retail supply obligations, including the quality safety and reliability of supply. • Billing information requirements • Payment and payment difficulty policies • Disconnections and restrictions for non-payment. As part of SA Water's 2020 Regulatory Determination process the Commission reviewed the code applying to SA Water. SA Water's initial submission did not propose any changes to the Code. However, the Commission undertook a series of workshops, consultations and reviewed information on complaints held by SA Water. The Commission concluded that the Code was still appropriate subject to a few variations. **Minor and Intermediate Retailers** The Water Retail Code for Minor and Intermediate Retailers establishes requirements around:[199] • Standard form customer contracts. • A Customer Charter to provide customers with a summary of their rights and responsibilities. • Minimum requirements around billing, billing disputes, payment terms and methods to ensure customers receive accurate billing information in a timely manner. • Limitations on the grounds on which suppliers can restrict or disconnect customers and requirements to ensure that customers can have their supply restored quickly. • Procedures for dealing with customer enquiries and complaints.
Maintaining economic and financial sustainability	The recent SA Water draft determination included a section on the Commission's view on ensuring that SA Water can continue to provide regulated services to customers in the long-term.[200] The Commission explained that it considered the risks faced by SA Water to be low given that it is a monopoly business with cost-based revenue caps and cost pass-through arrangements. The Commission rejected an argument by SA Water that the draft determination would mean it would not meet three quantitative ratios required to maintain an investment grade credit rating.[201] The Commission argued that an assessment of financial viability should be based on all available information and a limited number of quantitative indicators did not

[197] ESCOSA (2012), June, pg. 40.

[198] Water Retail Code - major retailers and Water Retail Code - minor and intermediate retailers

[199] ESCOSA (2016c), Issues Paper – Inquiry into regulatory arrangements for small-scale water, sewerage and energy services, August.

[200] ESCOSA (2020b), SA Water Regulatory Determination 2020 – Draft Determination: Statement of reasons, March.

[201] Interest coverage ratio, funds from operations over net debt ratio and debt gearing.

Topic	Details
	unambiguously indicate a cash flow deficiency. The Commission outlined risk mitigations available to SA Water to manage short-term cash flow issues, which include: • The use of equity injections. • The ability to set and change prices within the regulatory period. • The ability to use financial tools and products to hedge risks. • The regulatory pass-through mechanism. Changes in uncontrollable costs (e.g. weaker than expected demand and project cost overruns) may be recouped via the cost-pass-through mechanism. The regulatory regime also includes a pass-through revenue adjustment mechanism.[202] This allows the revenues, including the time cost of money to be applied, to be adjusted for a pass-through event at a subsequent price determination. A pass-through event is defined as either a: • A change in legal obligation event; and/or • An extraordinary event. An extraordinary event is defined as: • Unforeseen or could not be reasonably quantified at the time the price determination was made • The event was beyond the control of SA Water acting prudently and efficiently • The event had a material impact on the cost of provision of a drinking water retail service or a sewerage retail service. For a pass-through event to be material the total cost meets or exceeds $10 million. There were no cost pass-through applications by SA Water during the last regulatory period.
Any other relevant points	ESCOSA has proposed to update the rate of return annually. The risk-free rate, cost of debt and long-term inflation expectations will be updated.
How does the regulator measure success?	The Commission's 2017-20 Strategic Plan lists indicators of success: [203] • Decisions evidenced and based on statutory frameworks. • Consumer confidence in the work of the Commission. • Stakeholders engaged through public consultation • The Commission is always responsive to stakeholders • Independent and timely advice provided to South Australian Government • Commission's performance program achieved. The Commission also publishes annual corporate performance plans.[204] These set out the Commission's key regulatory an advisory projects and outcomes. This lists three priorities: • Priority 1: We will establish consumer protection frameworks to promote the delivery of service levels valued by consumers at an efficient cost. • Priority 2: We will keep regulated entities accountable to their customers through transparent monitoring and public reporting on performance • Priority 3: We add value to South Australia by delivering impartial, credible and robust regulatory and economic advice

[202] ESCOSA (2020c), SA Water's water and sewage retail services: 1 July 2020 – 30 June 2024 – Draft for consultation, July.

[203] https://www.escosa.sa.gov.au/ArticleDocuments/1014/20170308-Corp-StrategicPlan_2017-2020.pdf.aspx?Embed=Y

[204] For example for 2019-20: ESCOSA, Performance Plan 2019-20.

Topic	Details
	In the Commission's recently published strategy they highlight that building their evaluation capability is a priority.[205] This includes evaluating the outcomes of regulatory decision making and the Commission's operational performance. They outline their intention to assess the effectiveness of the regulatory determination process for SA Water's 2020 Regulatory Determination when it is complete.

[205] ESCOSA (2020c), *Strategy 2020-2023*, May.

Appendix C OFWAT/ WATER

Topic	Details
Overview	Since the water and sanitation industry in England and Wales (E&W) was privatised in 1989 a regulatory framework has been in place aimed at ensuring there is investment in the sector to achieve high standards of service at a fair price. In the last 30 years companies have invested more than £130 billion in maintaining and improving assets and services, achieving high quality and environmental standards. This investment has been privately funded by the 17 appointed monopolies. There have not been any subsidies from the government since privatisation. A fundamental governance feature of the sector is the separation between policy and regulation: A government department, the Department for Environment, Food and Rural Affairs (Defra), establishes sector policy objectives in legislation; and regulators ensure the sector achieves those objectives: • Ofwat, the economic regulator who runs the regulatory framework and sets tariffs based on it; • Drinking Water Inspectorate (DWI), the quality regulator; • Environment Agency (EA), the environmental regulator; and • Competition Markets Authority (CMA), the appealing body.
Industry structure	The sector is served by 16 privately-owned regional monopolies and one non-for profit (Welsh Water): ten water and sewerage companies (WaSCs); and seven water only companies (WoCs). The seven WoCs provide water in relatively small areas within the territories of the ten WaSCs. So WaSCs cannot provide water in those areas within their own regions.
Regime type	The basic regulatory regime run by Ofwat since privatization, depicted in the figure below, is an example of a tuned down (or balanced) RPI – X regime. *Figure C.1: Ofwat process*  *Source: CEPA* There is a revenue cap set in real terms and adjusted by an inflation index. Ofwat moved from capping prices to capping revenues. Ofwat's moved to a revenue cap to reduce the incentive for companies to outperform the cap by selling greater volumes of water and because it reduced the disincentive on them to encourage customers to improve water efficiency.[206] This cap provides the basic incentives for companies to achieve efficiency savings. This cap is combined with four fundamental mechanisms aimed at ensuring the overall power of incentives and the allocation of risks are appropriately balanced: • **Regular price control reviews**, undertaken every five years. This ensures that there is a regular point in time at which Ofwat decides how the efficiency gains are shared between companies and consumers. • **Quality regulation**, to ensure efficiency savings are not achieved at the expense of quality. An example of quality regulation is the Guaranteed Standards Scheme (GGS), whereby if a

[206] Ofwat (2015b), *The form of the price control for monopoly water and sewerage services in England and Wales – a discussion paper*, November, page 13.

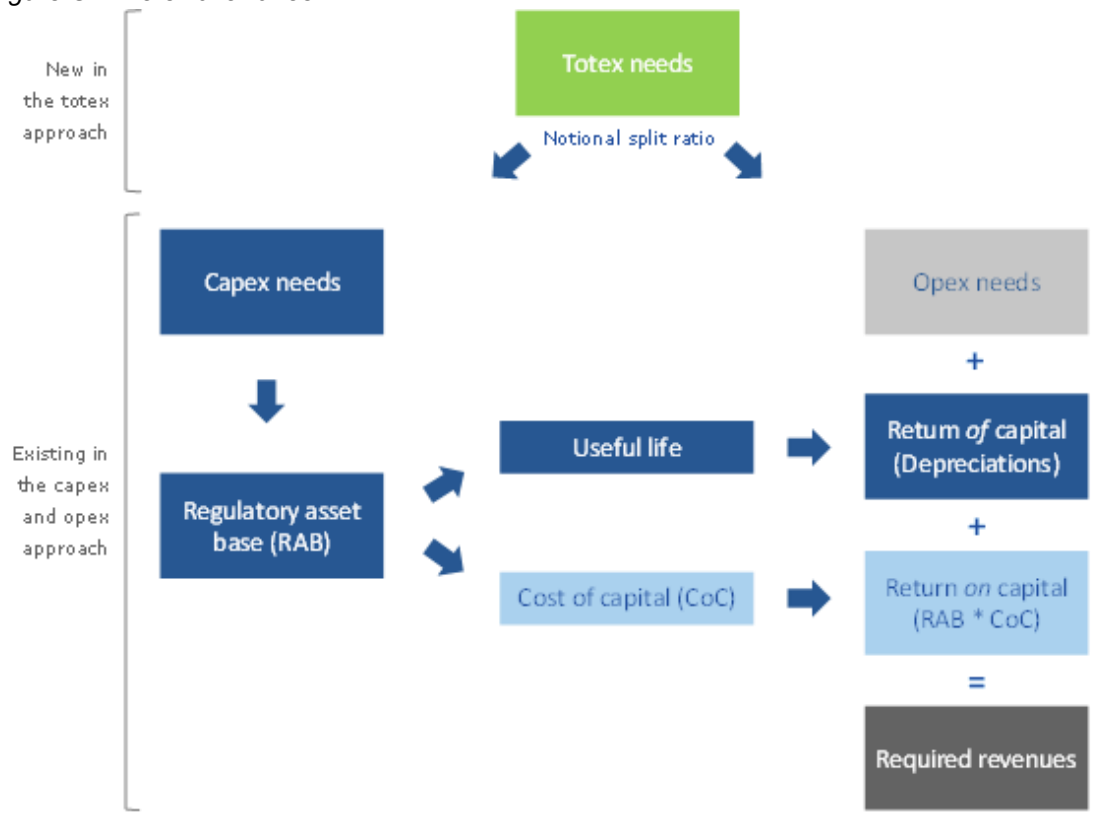
Topic	Details
	company fails to meet any of the guaranteed standards, it must automatically pay a pre-set penalty to the affected customers. • **Comparative competition**, to ensure companies do not assume that efficiency targets will be set purely based on their own costs and thus do not lose incentives to cut costs. An example of this is the use of econometric cost modelling for assessing expected costs. • **Pass-throughs** of certain costs to ensure that companies are not penalised for changes in costs they cannot control. An example is the interim determination of price limits (IDoKs), whereby companies can apply to Ofwat for a recalculation of the price cap in the middle of the regulatory period, if they can show that certain pre-agreed costs have exceeded certain pre-set thresholds. Ofwat has used a building blocks approach since privatisation to calculate revenue requirements. The biggest change was in PR14, when a totex approach with a notional ratio between opex and capex was introduced. The building blocks approach remunerates opex instantly as it is spent; and capex with a delay via a return *on* capital and a return *of* capital, ensuring intergenerational equity. In PR14 and PR19 the amount of opex and capex is determined by applying a notional split ratio to the overall totex figure. This methodology is depicted in the figure below. *Figure C.2: Totex allowance*  *Source: CEPA*
Price control process	Since the 2014 price review (PR14) Ofwat has adopted a **risk-based approach** to assessing companies' business plans. Under this approach Ofwat differentiates among issues and companies, focusing regulatory effort on the issues and companies that could have the biggest impact on customers. During price controls companies are categorized in different groups based on their business plan submissions and a parallel price control with different regulatory treatment (e.g. timelines, scrutiny, rewards, etc.) is undertaken for each group. Some companies (those with the best plans) receive direct financial benefits, as well as a procedural benefit of agreeing a plan early and the reputational benefit of being top in a league table. The figure below shows the three tracks Ofwat used for the first time in PR14.

Figure C.3: PR14 length

Source: CEPA

In the 2019 Price Review (PR19) Ofwat streamlined the approach used in PR14 using four tracks instead of three:[207]

- **Exceptional**: companies receive an amount equivalent to a 20 basis points (bp) to 35bp addition to the RoRE over the whole price review period, based on the notional gearing of 60%; and procedural incentives through an early determination.
- **Fast-track**: companies receive an amount equivalent to a 10 bp addition to the RoRE; and procedural incentives through an early determination.
- **Slow-track**: companies receive standard incentives and price control timings.
- **Significant scrutiny**: companies receive reduced cost sharing rates in the Cost Sharing Mechanism, and potentially capped outcome delivery incentive outperformance payments.[208]

Companies' business plans are categorised using a pre-set method. In PR19 companies' plans were assessed against three key characteristics (quality, ambition, and innovation) and nine key test areas that reflected Ofwat PR19 themes (engaging customers; addressing affordability and vulnerability; delivering outcomes for customers; securing long-term resilience; targeted controls, markets and innovation; securing cost efficiency; aligning risk and return; accounting for past delivery; and securing confidence and assurance).

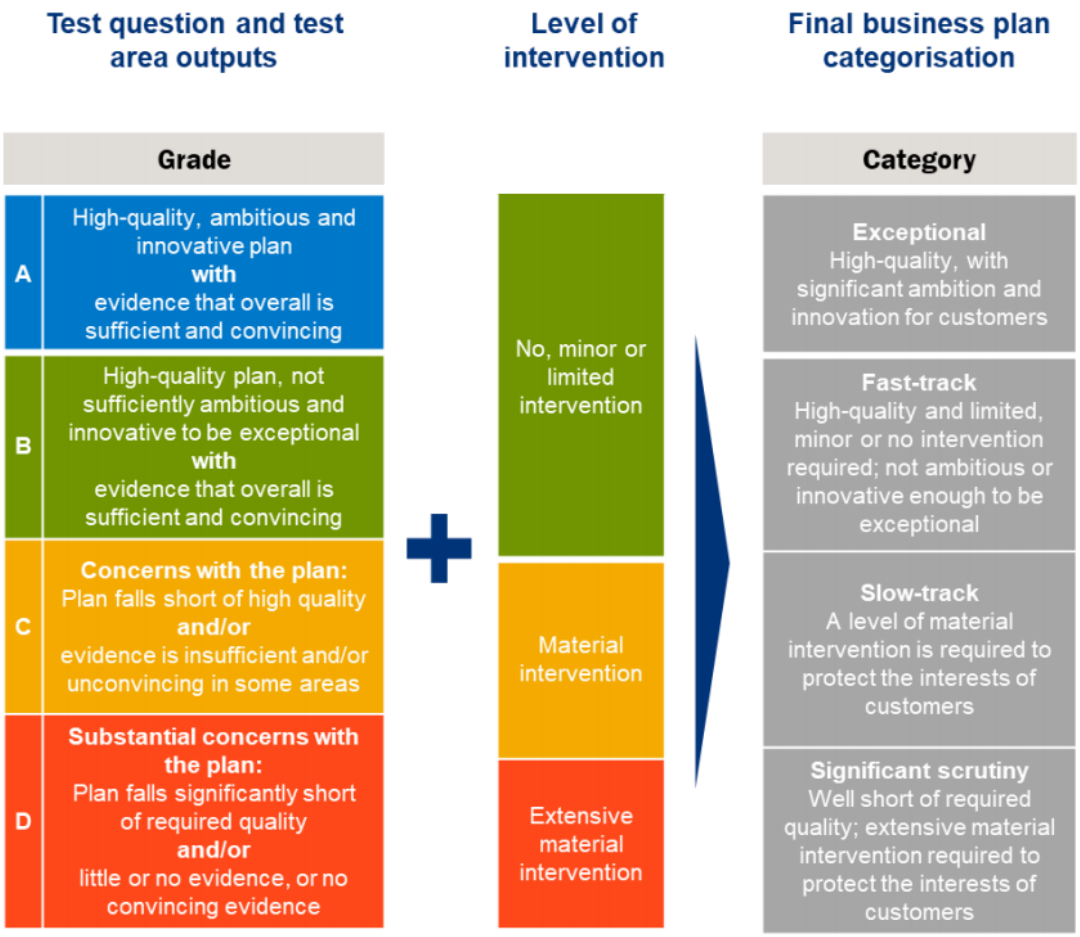
A key part of this categorization exercise is the initial assessment of business plans. The figure below shows the results of PR19 initial assessment of business plans and how these results lead to the categorisation of companies.

[207] Ofwat (2017a), *Delivering Water 2020: Our final methodology for the 2019 price review*, December, pages 244-248.

[208] Ofwat (2017a), pages 141-142.

Figure C.4: PR19 initial assessment of business plans

Test Area	Water and sewerage companies											Water only companies					
	Anglian Water	Dŵr Cymru	Hafren Dyfrdwy	Northumbrian Water	Severn Trent Water	South West Water	Southern Water	Thames Water	United Utilities Water	Wessex Water	Yorkshire Water	Affinity Water	Bristol Water	Portsmouth Water	South East Water	South Staffs Water	SES Water
Engaging customers	A	B	C	B	B	B	C	C	B	B	B	C	B	C	C	B	C
Addressing affordability and vulnerability	B	B	D	B	B	B	B	C	A	B	C	C	C	C	B	C	B
Delivering outcomes for customers	B	C	D	C	C	B	C	C	C	C	C	C	C	C	B	C	C
Securing long-term resilience	C	C	D	C	C	B	D	D	B	C	C	D	C	C	C	D	C
Targeted controls, markets and Innovation	B	C	C	C	C	C	C	C	B	B	B	C	C	C	B	C	C
Securing cost efficiency	D	D	B	C	B	B	D	D	B	C	C	C	C	B	C	C	D
Aligning risk and return	C	C	D	B	C	B	C	C	C	D	C	D	C	C	C	C	C
Accounting for past delivery	B	C	D	C	B	D	D	D	B	B	B	C	D	C	D	B	B
Securing confidence and assurance	D	A	C	C	B	C	C	C	B	C	C	C	C	C	B	C	D



Source: Ofwat (2019b), PR19 initial assessment of plans: Summary of test area assessment, January.

The risk-based review represents a new and universal tool for Ofwat to incentivise companies to focus efforts in certain priority areas (i.e. the test areas mentioned above). The risk-based review is used to incentivise companies to put forward proposals that are aligned to customer needs, or that protect the environment, or that do not work against the new competition arrangements. The UK Government is considering changes to the price control length or taking some longer term investments (such as reservoirs) out of the five-year price control cycle.[209]

Topic	Details
	There was also a change in PR14 with Ofwat introducing board leadership, transparency and governance principles. Ofwat brought these in to ensure that companies under private unlisted ownership demonstrate that the water sector fully understands the need for it to operate transparently in the public interest.[210] Ofwat updated these principles for PR19.[211]
Role of customers and other stakeholders	Until PR14 Ofwat's regime lacked explicit principles, processes or incentives to incorporate the views of customers in companies' decisions. There was an implicit requirement to support every line of companies' business plan with Cost-Benefit Analysis (CBA), which was particularly emphasised in the 2009 Price Control (PR09). This implicitly meant that customer views would have to be considered, as a key building block of quantifying costs and especially benefits within CBA are customer preferences. However, it was only in PR14 that the views of customers explicitly became a key input in the decision-making process of the price control, with clear principles, processes and incentives for companies to incorporate those views. Each company had to put in place and support independent company Customer Challenge Groups (CCGs). In PR19 the explicit roles of the key players in customer engagement were:[212] • **Companies**: To be responsible for carrying out direct local engagement with their customers to understand their priorities, needs and requirements, which should then drive decision making and the development of the company's business plan. • **CCGs**: To provide independent challenge to companies and provide independent assurance to Ofwat on: the quality of a company's customer engagement; and the degree to which this is reflected in its business plan. • **Ofwat**: To inform, enable and incentivise good customer engagement; facilitate more CCG collaboration; and continue to provide information and clarity (not detailed or prescriptive guidance) about its expectations. As part of the risk-based review discussed above, companies that prove that (among other things) they owned the relationship with their customers were fast tracked in the price control process and thus received financial, procedural and / or reputational benefits. The figure below shows what Ofwat means by owning the relationship with customers.

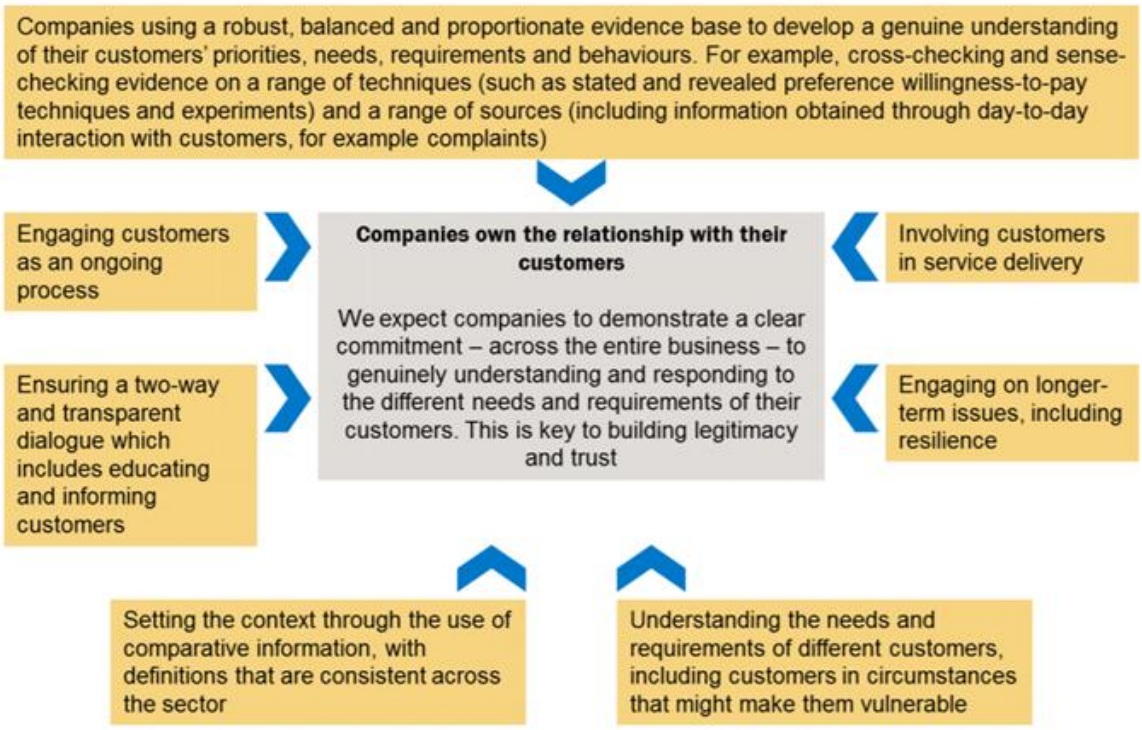
[209] House of Commons Library (2020), *Economic regulation of the water industry in England and Wales – Briefing paper*, June.

[210] Ofwat (2014b), *Board leadership, transparency and governance – principles*, page 4.

[211] Ofwat (2019d), *Board leadership, transparency and governance – principles*.

[212] Ofwat (2017a).

Figure C.5: PR19 companies' relationship with customers



Source: Ofwat (2017a), Delivering Water 2020: Our final methodology for the 2019 price review, December, page 27.

From a broader perspective it is worth noting that consumer legitimacy is a discussion that is happening across the whole of the society, not just within the water sector. For example, The British Academy recently published a report that calls for a redesign (including legal and regulatory reforms) of the role of the Corporation in society.[213]

In line with this, and providing a legal underpinning to the regulatory mechanisms discussed above, in 2019 Ofwat introduced a binding principle of Board Leadership and Governance into the licences of all the water companies that requires boards to set a purpose for the company that recognises the needs of its wider stakeholders as well as its shareholders.

Other stakeholders

Ofwat held a number of stakeholder consultations to help define its PR19 methodology, including:

- Two workshops to test Ofwat's early thinking on outcomes (including the use of common performance commitments, comparative assessments, and asset health).[214]
- A discussion on the common metrics that Ofwat uses to assess affordability and vulnerability.[215]
- Two workshops and a request for written submissions on Ofwat's approach to cost of debt.[216]
- Working groups to develop the pilots for the customer measure of experience (C-MeX) and developer services measure of experience (D-MeX), two metrics providing the basis for financial incentives in PR19.[217]
- Working with companies and other stakeholders to finalise consistent definitions for those of the common performance commitments where a definition was not yet complete, including through a joint Ofwat-Water UK project on seven of them.[218]

Ofwat also indicated that environmental and quality regulators would need to consider whether companies are at risk of breaking their statutory obligations and communicate their concerns to the companies and the CCGs, in order to allow companies to address such issues before an intervention from Ofwat is required.

<table>
<tr><th>Topic</th><th>Details</th></tr>
<tr><td></td><td>In addition, key stakeholders (including the Consumer Council for Water, the Environment Agency, Natural Resources Wales, the Drinking Water Inspectorate, natural England and the Customer Challenge groups) are assigned senior Ofwat staff as dedicated leads.[219]
For PR14, Ofwat also had in place a Customer Advisory Panel (CAP) which provided it with sector wide advice. The CAP was made up of consumer group representatives, business organisations, and large customers. Ofwat did not use a CAP for PR19 on the basis that it found it difficult to reconcile its PR14 timeframes with CAP meetings. It also noted that it wanted to be challenged by customers on its methodology and its implementation.</td></tr>
<tr><td>Approach to assessing efficient and prudent expenditure</td><td>In PR14 Ofwat introduced the totex (from total expenditure) approach to assess regulated companies' expenditure needs and then calculate revenue requirements. As the table below shows, this approach is very different to the traditional capex and opex approach previously used by Ofwat.
<table>
<tr><th></th><th>Traditional approach</th><th>Totex approach</th></tr>
<tr><td>Timeline</td><td>From privatization until PR09</td><td>PR14 and PR19</td></tr>
<tr><td>Philosophy</td><td>Capex needs are separate from opex needs</td><td>Capex and opex needs can be merged into the encompassing concept of totex needs</td></tr>
<tr><td>Modelling of costs needs</td><td>Results of models used indirectly (via efficiency targets applied to previous cost levels) to predict expenditure needs
For capex, targets were calculated using a variety[220] of ad-hoc models such as unit cost models; and for opex, targets were calculated using econometric models based on well-established methods such as Corrected OLS
A glide path to reach efficiency targets was assumed</td><td>Results of models used directly to predict expenditure without considering previous levels of expenditure
Capex and opex modelled jointly based on a set of totex models.
New in PR19: Efficient operation assumed to be achieved in first year of price control period, and data from other sectors considered to build cost models</td></tr>
<tr><td>Calculation of required revenues</td><td>Building blocks approach</td><td>Building blocks approach, applying a notional capex / opex split to the totex figure</td></tr>
</table></td></tr>
</table>

[213] The British Academy (2019), *Principles for Purposeful Business. How to deliver the framework for the Future of the Corporation*.

[214] Ofwat (2016b), *Outcomes – Water 2020 stakeholder workshop*, June; and Ofwat (2017e), *Outcomes – Water 2020 stakeholder workshop*, February.

[215] Ofwat (2017a), p. 33.

[216] Ofwat (2017a), p. 176.

[217] Ofwat (2017a), p. 164.

[218] Ofwat (2017a), p. 250.

[219] Ofwat (2018a), *Engagement in the 2019 price review*, June, p. 6-7.

[220] Capex was in fact split into four sub-categories: Below-ground maintenance; Above-ground maintenance; Below-ground enhancement; and Above-ground enhancement. Each sub-category was modelled differently.

Topic	Details		
	Financial incentives	Different for capex and opex (e.g. in PR09 incentive rates were 30% for capex and between 35% and 57% for opex)[221]	Equalized for capex and opex via application of totex menu

Source: CEPA

The key difference lays on how Ofwat assesses the expenditure needs:

- In the traditional approach this was done separately for capex and opex taking heavily into consideration the existing levels of expenditure at the time of the price control. The existing levels of expenditure were used as part of the data considered to create a set of models that were mostly cross sectional models, and as the starting point of an assumed glide path.
- In the totex approach only totex needs are calculated and there is a much more limited use of the existing levels of expenditure at the price control. The existing levels of expenditure are simply used as part of the data considered to create a set of models, which are both cross sectional and time series models. The existing level of expenditure are not used as the starting point of an assumed glide path because no glide path is assumed. Ofwat directly assesses totex by forecasting the cost drivers and applying those forecasts to the modelling suit.

The totex approach is used in combination with the modified business blocks discussed in the "Pricing" section of this case study, and the menu approach discussed in "other incentive mechanisms" section.

Pricing	While the water and sewerage companies are regulated under a revenue cap, Ofwat sets the charging rules for the regulated companies to design their tariffs by. The government, via DEFRA, has set out the principles for Ofwat to set the charging rules. In addition to setting cost-reflective charges, Ofwat must also have regard for the following principles in setting charging rules: • Fairness and affordability. • Environmental protection. • Stability and predictability. • Transparency and customer-focused service.[222] While the 1st, 3rd and 4th principles are relatively standard pricing principles. The Environmental protection principle is relatively unique. Defra sets this out as a requirement to "*achieving the right balance between long-term planning, environmental regulation and the use of market mechanisms to secure the most efficient use of scarce water resources.*"[223] Defra goes on to note: "*Charging can play a key role in securing the economically and environmentally efficient use of resources; encouraging innovation and ensuring that environmental goods are costed appropriately. There are substantial cross-subsidies inherent in the water sector, due to the reliance of all customers on sufficient resources and a resilient network. In many cases unwinding these cross subsidies will be of little practical benefit and may lead to bill instability; creating winners and losers without delivering any measurable policy benefit. However, in some cases it may be beneficial to use targeted price signals to improve recognition of environmental costs. For example, if a very large water user is making a decision about where to locate new premises, it would make sense for them to consider the benefits associated with areas where water is plentiful. Currently, such incentives are minimal. However,*

[221] CEPA (2012), *Incentives and menus - A report for Ofwat*, July.

[222] Defra (2016), *Charging guidance to Ofwat*, January, page 8.

[223] Defra (2016), page 8.

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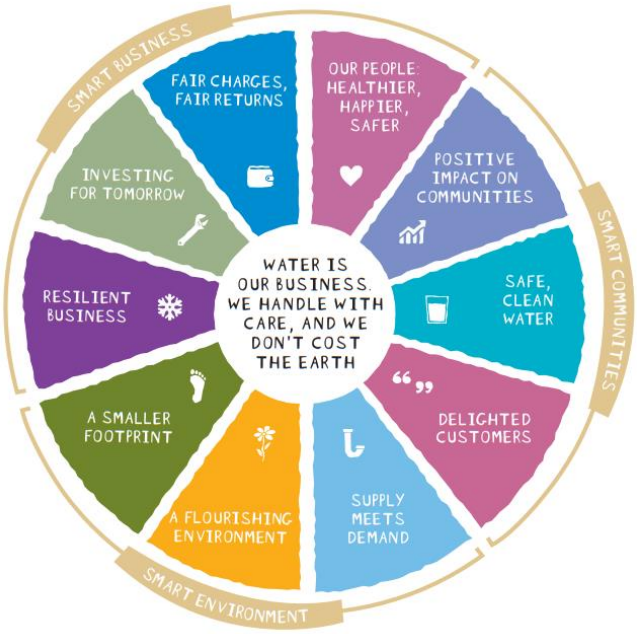
	such tools must be used appropriately to avoid the creation of perverse incentives and to ensure that any change is in the overall interest of customers and the environment. *In this context, the Government recognises that innovative tariff structures can send positive price signals and improve economic and environmental efficiency. This might involve pricing to reflect seasonal peaks or incentivise collection and use at times of lower demand. Rising block tariffs can also have a role in encouraging customers to consider their use of water. However, as above, the introduction of such tools needs to be properly evaluated including with regard to customer affordability and acceptability, especially where costs would be incurred as part of implementation. Well-designed small-scale tariff trials can provide important evidence to guide decisions on tariff design. A balance will need always to be struck with the principles of fairness and affordability and stability and transparency.*"[224] Ofwat undertakes impact assessments of its rule changes. For example, Ofwat undertook an impact assessment for its 'New Connection charging rules'.[225] While this included analysis such as the distributional impact on customers, because it only sets the rules, detailed analysis of charging is undertaken by the regulated companies. The rules require the companies' boards to approve impact assessments and handling strategies where increases are above 5%.[226]
Services and performance	In each price determination Ofwat agrees with the companies on a number of targets that companies commit to achieve and associated incentive schemes to incentivize the achievement of those targets. In the past, those targets and associated incentive schemes were designed, proposed, and set almost unilaterally by Ofwat. The **outcomes approach**, introduced in PR14, changed this logic. A new set of high level explicit objectives, known as outcomes, became part of what companies commit to achieve. For example, the figure below shows the outcomes proposed by a WaSC in its PR19 business plan submission.

[224] Defra (2016), pages 9-10.

[225] Ofwat (2016c), *Appendix 6: Final Impact Assessment for New Connections charging rules*, December.

[226] Ofwat (2018b), *Wholesale Charging Rules issued by the Water Services Regulation Authority under sections 66E and 117I of the Water Industry Act 1991*, December.

Figure C.6: Anglian Water outcomes proposal



Source: Anglian Water (2018), "Our business plan – 2020-2025". Note: The original formatting of the business plan has been maintained.

The outcomes approach also encompasses associated performance commitments (i.e. promises made in a measurable way) and associated incentive schemes (i.e. rewards and penalties for achieving or not achieving those promises). Outcomes, associated performance commitments and associated incentive schemes are all decided jointly by companies, customers and Ofwat:

- Ofwat provides guidance on potential outcomes, performance commitments and incentive schemes. There are some outcomes, performance commitments and incentive schemes that Ofwat pushes more strongly to the point of establishing them as common and compulsory for all companies. In PR19, for example, Ofwat established 14 common and compulsory performance commitments for which Ofwat expects companies to set stretching levels (see figure below).
- Companies engage with customers to establish preferred outcomes, performance commitments and incentive schemes.
- Companies propose outcomes, performance commitments and incentive schemes to Ofwat via the business plan submission process.
- Ofwat provides views on companies' proposals during the business plan submission process, and accepts or rejects companies' final proposals in the final price determination.

The Figure below shows the 14 common performance commitments established by Ofwat in PR19.

Figure C.7: PR19 common performance commitments

Source: Ofwat (2017a), Delivering Water 2020: Our final methodology for the 2019 price review, December, page 46.

At the beginning of PR19 Ofwat clearly communicated its expectation that companies should set stretching levels for all their performance commitments. This meant:

- Setting appropriate initial service levels.
- Challenging the level of stretch in their performance commitments with their customers, CCGs and other stakeholders against a range of approaches including, but not limited to:
  - cost–benefit analysis – taking a wide range of information on customer preferences into account;
  - comparative information – companies should use a forecast upper quartile level for each year of the price control;
  - historical information;
  - minimum improvement;
  - maximum level attainable; and
  - expert knowledge.

For three common performance commitments (supply interruptions, internal sewer flooding, and pollution incidents), Ofwat set the expectation that companies would determine their commitment levels to at least the forecast upper quartile level in each year of the price control. Ofwat noted that these are performance commitments for which there is particularly good-quality data and there is no clear reason why companies should not be achieving the same stretching level of performance.

When setting their incentive out-/under-performance rates, Ofwat specified that the companies should:

- "*Companies can base their ODI rates on the existing formulas developed at PR14 but amended such that companies can use alternative customer valuation methodologies.*
- *Companies can use other customer evidence to propose changes to the ODI outperformance and underperformance payment rates calculated according to the existing formulas, provided the changes are well justified.*
- *Companies should use forecast efficient marginal cost levels in their estimates of incremental cost in the underperformance payment formula.*
- *Companies should not propose top-down, calculated outperformance and underperformance payment rates derived from a pre-set Return on Regulated Equity (RoRE) range or amount of revenue. Companies should use a bottom-up approach, which is based on customer evidence.*
- *Companies should calibrate their financial ODIs with total expenditure (totex) efficiency sharing and any other incentives that might apply to their performance. Companies can calibrate their ODI rates for overlap between PCs if they can provide evidence this is appropriate.*
- *Companies should provide information on the approach and evidence they have used to set ODI outperformance and underperformance payments, through the relevant*

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	business plan tables, the associated table commentaries and the sections of their business plans on ODIs. Any adjustments should be clearly explained, grounded in customer evidence and quantified transparently."[227] It is worth noting, one of the reasons that Ofwat moved to having common performance commitments was due to concerns about some of the cost benefit approaches undertaken by some companies. Ofwat noted that, "*In some cases, it was difficult for companies to identify robust information [including for willingness to pay], resulting in a lack of confidence in some proposed service levels.*"[228] It was also concerned that the companies were not sufficiently 'stretching' themselves with regard to these outputs. Ofwat discovered issues with the implementation of this approach for PR14. Ofwat initially only set two performance commitments – leakage and the service incentive mechanism (this was around customer service response). The companies defined all other performance commitments, this led to a number of similar but not identical performance commitments. This made it difficult for stakeholders to compare performance across companies and even with companies' historical performance.[229] For the particular case of leakage, Ofwat went further and challenged companies to set stretching performance commitment levels to: • achieve forecast upper quartile performance (in relation to leakage per property per day and leakage per kilometre of main per day) where this was not being achieved – or justify why this would not be appropriate; • achieve at least a 15% reduction in leakage (one percentage point more than the largest reduction commitment at PR14) – or justify why this would not appropriate; and • achieve the largest actual percentage reduction achieved by a company since PR14 – or justify why this would not appropriate.[230] The small print of PR19 methodology then clarified that leakage reduction should not go beyond the economic level of leakage, which is the traditional approach that Ofwat has used since privatisation to let companies decide up to which point they should reduce leakage. Note that in April 2018 the National Infrastructure Commission (NIC) published a report in which it recommended that "*Defra should set an objective for the water industry to halve leakage by 2050, with Ofwat agreeing 5 year commitments for each company (as part of the regulatory cycle) and reporting on progress.*" [231] Ofwat's introduction of the leakage special challenge could be a response to this recommendation but keeping alive the concept of the economic level of leakage and thus ensuring that the economic rationale of the leakage performance required was maintained. Companies are required to report their performance annually. Companies are required to publish 'reputational ODIs' to customers and their CCGs. [232] Companies also have financial ODIs, these can be common, or company specific. For PR19 Ofwat removed the cap and floor on the aggregate RoRE (of ±2%) that companies could earn/loss on ODIs. Instead Ofwat proposed an indicative range of ±1% to ±3%.[233]

[227] Ofwat (2019e), *Technical appendix 1: Delivering outcomes for customers*, January.

[228] Ofwat (2017b), *Delivering Water 2020: Our methodology for the 2019 price review: Appendix 2: Delivering outcomes for customers*, page 43.

[229] After collecting consistent data from companies for several years through the 'June Returns', Ofwat decided to cease the June Returns process in order to reduce the regulatory burden on companies in line with the Grey Review. It is not clear how successful this approach was as companies still need to provide a lot of this data but Ofwat lost some control of it.

[230] Ofwat (2017a), page 15.

[231] NIC (2018), *Preparing for a drier future - England's water infrastructure needs*, April.

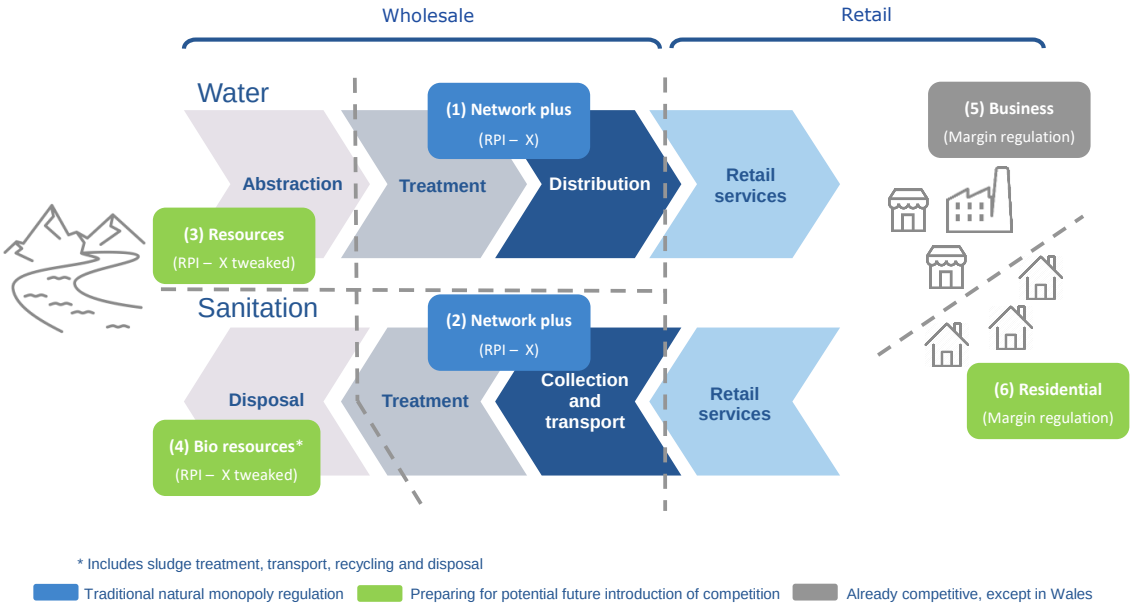
[232] Ofwat (2017a), page 58.

[233] Ofwat (2017a), page 60.

Topic	Details
	Ofwat has also set up a website: Discover Water (www.discoverwater.co.uk) that provides information on how the sectors and individuals companies are performing.
Competition	There were attempts to promote competition in the water sector during PR04 and PR09 with the Water Supply Licensing (WSL) regime. However, these attempts failed categorically. In Ofwat's words:[234] *"No customers have yet switched supplier, few wholesale master agreements (WMAs) have been signed between licensees and appointed water companies, most WMA negotiations are taking too long to complete, and not even half of licensees appear to be actively engaging in WSL negotiations".* From PR14, however, Ofwat embarked in a competition reform that is much broader, involving: • Separated price controls for different activities, tailored to degree of expected competition. • Business retail legally separated and open to competition in England. • The rest of the retail market, water abstraction, and wastewater disposal (including sludge treatment) regulated to facilitate future introduction of competition. • New criteria for access pricing (replacement of the old and perceived as flawed 'retail-minus' access pricing principle). • Increased emphasis in greater use of markets in the financing, design and delivery of new water assets by third parties, rather than incumbent water companies. This reform is quite radical and was undertaken in cooperation with Defra, which introduced the required legal changes in the Water Act 2014. For example, in the past the sector was regulated as a vertically integrated monopoly. With the current competition reform, the sector is split into the following six subsectors and a separate price control is run for each one of these subsectors: • Water network plus. • Wastewater network plus. • Water resources. • Wastewater bio resources. • Retail business. • Retail residential. Retail business has already been separated legally and the sector has been open to competition in the market since 2017. Retail residential could follow suit. Water resources and wastewater bio resources are still being regulated as natural monopolies but with certain tweaks that hint Ofwat's intention to introduce competition and depart from the traditional RPI – X system of regulation. The only elements of the value chain that are planned to remain being regulated as natural monopolies are the network plus elements. This split of the water industry and the corresponding six separate price controls are depicted in the figure below.

[234] Ofwat (2007), *Outcomes of Ofwat's internal review of market competition in the water sector*, April.

Figure C.8: England and Wales water industry



Source: CEPA

This split of the industry is expected to set the basis for some stronger method of separation going forward. It is worth noting here that Ofwat sees the competition reform as a long step by step process, not a one-off massive reform.

Direct procurement for customers

As part of PR19 Ofwat introduced 'direct procurement for customers' (DPC) arrangements.[235] A DPC is where a regulated water company competitively tenders for a third party to design, build, finance, operate and maintain large scale infrastructure that would otherwise be delivered by the incumbent. Ofwat considered this as an alternative delivery route for large-scale enhancements during PR19. The arrangement aims to reduce costs, increase innovation, and involve the market in setting the cost of capital. Ofwat's guidance to companies highlighted the following elements:

- Regulated water companies should consider DPC options as part of their PR19 proposals. DPC should be considered for large-scale enhancement projects expected to cost over £100 million based on whole-life totex. While not all projects that exceed this threshold will be suitable, Ofwat expects companies to use this threshold as a trigger for exploring DPC as an option.
- Companies are expected to assess the value for money of delivering a project through DPC against a baseline delivery approach. Ofwat expects that projects that meet the threshold should proceed through DPC unless a value for money assessment provides robust evidence that another approach provides better value for customers.
- A range of possible tender models can be used, including 'early' models where there is greater scope for innovation and design by the bidder.
- Regulated companies are expected to act as buyers on behalf of customers. They are responsible for managing the appointed provider
- DPC's will be delivered through a long-term contract (15-25 years). This contract will include a revenue stream from revenue collected from customers by the regulated company.

[235] Ofwat (2017a).

Topic	Details
	As this scheme is new it is not possible to evaluate whether it has successfully led to better value for money for customers and Ofwat has not yet undertaken an evaluation. However, it is worth observing whether companies did propose to use the DPC method for any procurements in PR19. We undertook a review of 17 PR19 determinations. We found that 11 either did not propose to use DPC for any projects or where there were projects that met the threshold Ofwat accepted the company's argument against using DPC. There were three companies that explicitly committed to using DPC for at least one project. The remaining three committed to exploring this as an option for one or more projects. **New appointments and variations (NAV)** Ofwat oversees the NAV regime, which provides a mechanism to facilitate new entry into the water and wastewater sector.[236] This regime was introduced to provide a challenge to incumbents and in turn drive efficiencies and stimulate innovation. Ofwat can appoint a company that is not the incumbent if: • The incumbent agrees to transfer a part of its agreed ("consent") • The area is "unserved" • The appointment relates to a "large user" and the user wants to change supplier. The vast majority of new appointments have been granted under the unserved criterion related to new developments. However, the NAV market remains small and as of 2017 only 61,000 residential customers are served under this regime. Ofwat states that given the small size of NAV companies they seek to minimise the regulatory burden. This includes suspending some conditions for appointment if they consider that doing so was in the interests of consumers. At a high level the regime Ofwat applies is to ensure that: • Customers are no worse off than if they had been served by the local incumbent. • Appointed companies can finance their functions. • The applicant can fulfill its functions so the site is operationally and technically viable. Ofwat commissioned a review in 2017 and concluded that there were several issues with the regime that could be addressed, which included: • Reviewing the current regulatory and administrative barriers. • Taking steps to ensure that incumbent water suppliers meet their obligations such as providing information to NAV applicants. • Consider a set of pricing issues, especially with regards to bulk supply charges. • Raising awareness that this is an option available to developers.
Other incentive mechanisms	**Menu regulation** The application of menu regulation in water has evolved in time: it was first tried in PR09 only for capex, under the name of "capex incentive mechanism" (CIS); in PR14 it applied to the sum of capex and opex (totex), under the name of "totex menu"; and in PR19 a simplified version of the totex menu, named "cost sharing mechanism" has been used. All the applications maintain the same essence, which is explained below. For clarity, in PR19 Ofwat did not discontinue the use of the menu approach. It simply replaced the PR14 menu by a new menu that was baptised with a new marketing name: "Cost sharing mechanism". The newly implemented cost sharing mechanism has most of the key elements of a menu:[237] • a baseline; • a totex ratio determined by the companies' business plans submissions;

[236] Ofwat (2017c), *Study of the market for new appointments and variations – Summary of findings and next steps*, October.

[237] Ofwat (2017d), *Delivering Water 2020: Our final methodology for the 2019 price review Appendix 11: Securing cost efficiency*, Section 2, December.

Topic	Details
	• different incentive rates for different totex ratios; • a method to ensure that companies get the cash flow required to fund their operations; • a method to adjust returns ex-post based on out turn spend. Therefore, when in this section of the case study we say "menu" we mean the menu approach, which has been applied in water in E&W since PR09, and which has not been dropped in PR19. Menu regulation is a practical application of a theory developed by Laffont and Tirole in 1993[238] that proved that regulators could determine the optimum regulatory contract by offering companies a menu of appropriately designed contracts with different efficiency incentives. Until the introduction of menu regulation Ofwat's basic regulatory regime was a tuned down RPI – X regime in that it had several mechanisms that ensured there was a balanced degree of sharing of outperformance or underperformance between companies and consumers. For example, the fixed five-year period after which prices were reset considering efficiency gains or losses meant that cost outperformance or underperformance was shared in a given way between customers and companies. This sharing happened because companies kept outperformance gains or paid underperformance losses for a fixed period of time, after which potential gains or losses would get transferred to consumers. This sharing provided incentives of certain power for companies to save costs. For PR14, menu regulation changed Ofwat's basic regulatory regime by providing companies with a menu of optional potential regulatory contracts involving alternative explicitly pre-set incentive rates that companies could choose from. This is a fundamental change to the basic regulatory regime, as with the application of menu regulation the power of incentives of the regulatory regime became endogenous (i.e. determined by the choice of a company) and explicit (clearly outlaid so companies can make a choice). The companies made the menu decision by submitting a business plan with a given expenditure level. As Ofwat developed its totex benchmarking prior to the companies submitting their business, the business have some idea as to how their submissions will translate to the totex ratio. Expenditure levels that were below Ofwat's view of expenditure are regulated with a higher incentive rate; while expenditure levels above Ofwat's view of expenditure are regulated with lower incentive rates Another important change is that for menu regulation to work, Ofwat undertake an ex-post check of the actual expenditure during the price control period. This ex-post check is required so the actual reward the companies get during the regulatory period are adjusted at the end of the period (and compensated in the following period) so companies eventually are rewarded as intended in the menu system.[239] Ofwat sets allowances based on the companies' business plan expenditure occur i.e. its view plus the sharing factor multiplied by the difference between its view and the company's views. **Revenue forecast incentive (RFI)** While Ofwat has moved to a revenue cap it still has a symmetric revenue forecasting incentive. This is to incentivise companies to accurately forecast revenue recovery to protect customers from unnecessary bill shocks.[240]
Protecting the environment	The key regulatory mechanism to ensure that environmental outcomes are considered and balanced against expenditure levels is a requirement for companies to justify their business plans by using CBA. This has been a longstanding requirement in Ofwat's regulatory regime. The in the last two price controls (PR14 and PR19) from previous controls is that by using tools such as the risk-based

[238] Laffont, Jean-Jacques and Jean Tirole (1993), *A Theory of Incentives in Procurement and Regulation*, Cambridge, MA: MIT Press.

[239] Ofwat (2017a), page 142.

[240] Ofwat (2015b), page 5.

Topic	Details
	approach Ofwat has had more levers – such as the upfront reward – to punish or reward companies on the quality of their business plans, which includes the quality of the CBA undertaken for justifying those business plans. In PR19, Ofwat has increased the weight it places on companies demonstrating that they are ensuring that their plans reflect the changing climate, as government policy requires Ofwat to support the resilience of the water supply and sewerage systems to environmental pressures, population growth and changes in consumer behaviour.[241] Ofwat introduced a 'resilience' theme with seven 'resilience principles': • Principle 1: Considering resilience in the round for the long term The assessment of resilience should show a systematic and integrated understanding of service and systems risk across the entire business. Companies should assess resilience of their systems, and the services they provide, in the round. They should show a clear understanding of the interdependencies across operational, financial and corporate aspects of their business. This assessment should consider short, medium and long-term risks. • Principle 2: A naturally resilient water sector Resilient ecosystems and biodiversity underpin many of the key services provided by companies. Promoting ecosystem resilience and biodiversity is a key part of the decision-making process for ensuring resilient services (where this is consistent with companies' role as providers of water and wastewater services). • Principle 3: Customer engagement Aspirations on levels of resilience should be informed by engagement with customers, to help companies understand their customers' expectations on levels of service. This will also help companies understand their customers' appetite for risk and how customer behaviour, in matters such as water efficiency, might influence approaches to resilience. • Principle 4: Broad consideration of intervention options Companies' plans to manage resilience should consider a full set of mitigating actions and interventions that consider all of the components of resilience, including response and recovery. They should also explicitly consider options that involve cooperation and collaboration with other companies at a regional or even national level (where they offer best value). For example, transfers and cross border planning. • Principle 5: Delivering best value solutions for customers Companies' plans to manage resilience should consider the best value solutions for customers in the long term, which may involve long-run solutions. • Principle 6: Outcomes and customer-focused approach Companies' plans to manage resilience should inform the outcomes they propose. The proposed outcomes on resilience, and the associated stretching performance commitments they set, should also take into account future risks and customer preferences. • Principle 7: Board assurance and sign-off Companies' Boards will need to assure us that companies' business plans have been informed by: o a robust and systematic assessment of the resilience of the company's systems and services; o customer views on managing resilience; and o comprehensive and objective assessment of interventions to manage resilience in customers' long-term interests.[242]

[241] Ofwat (2017a), p. 72.

[242] Ofwat (2017a), page 79-80.

Topic	Details
	One particularly interesting performance commitment and incentive scheme that is not compulsory but that Ofwat has recommended companies to include in their PR19 proposals is the Abstraction Incentive Mechanism (AIM). The AIM is interesting because it is an innovative way of setting incentives for companies to deal with future scenarios of more water scarcity resulting from climate change, which complements other existing tools to reduce abstraction from sensitive sites, such as abstraction licence changes or licence conditions which require abstractions to cease during periods of low flows. The box below shows how the AIM works, according to the latest guideline from Ofwat.

The Abstraction Incentive Mechanism (AIM)

Objective

The AIM has the objective of encouraging water companies to reduce the environmental impact of abstracting water at environmentally sensitive sites when water is scarce.

How does it work?

For water companies to operate the AIM they need to:

- Identify the abstractions sites to which the AIM applies. The identification is done based on some pre-conditions set by Ofwat and additional conditions set by companies.
- Identify the trigger points for each AIM site to be considered "switched on". The AIM will generally switch on, subject to a hydrological trigger, when a reduction in abstraction from the abstraction site would be, or is likely to be, environmentally beneficial. Typically, this will be a river flow condition, but equally it might be a groundwater level condition, drought trigger or other appropriate measure.
- Identify the abstraction baseline for each AIM site. The company identifies its historical abstraction at times when the AIM would have been switched on had it applied in the past (e.g. the times when river flows were below the trigger threshold).
- Capture abstraction data at each AIM site and calculate performance. In general, to calculate performance on the AIM for a particular abstraction site the following formula applies:
- AIM performance in Ml = (average daily abstraction during period when flows are at or below the trigger threshold - baseline average daily abstraction during period when flows are at or below the trigger threshold) * length of period when flows are at or below the trigger threshold.
- Report results through their annual performance report.

Source: Ofwat (2016a), Guidelines on the abstraction incentive mechanism, February

Vulnerable customers	Ofwat encourages companies to address vulnerability with the combination of the outcomes approach and the risk-based approach that we now see in action across almost every area of the regulatory regime. In practice this takes form in the "addressing affordability and vulnerability" test discussed above. Note that in PR19 Ofwat has not required companies to have a common performance commitment for vulnerability because it has recognised that no single measure reflects the complexity and dynamism of vulnerability and the extent to which the challenges vary across companies.[243] Instead, Ofwat has required companies to include at least one bespoke performance commitment for addressing vulnerability in their business plans, after engaging with customers and taking on board challenges from their CCGs.

[243] Ofwat (2017a).

Topic	Details
	In addition, Ofwat has proposed three common metrics of vulnerability for companies to use:[244] • Proportion of eligible customers receiving support through vulnerability assistance option(s). • The number of customers contacted by the company about eligibility for vulnerability assistance options. • The percentage of customers receiving vulnerability assistance option(s) who are satisfied with the assistance. Ofwat has also encouraged (and expected) the companies to use customer data to help identify customers that might find themselves in vulnerable circumstances. This includes sharing data to ensure vulnerable customers are supported.[245]
Maintaining economic and financial sustainability	The approach that Ofwat uses to ensure economic and financial sustainability has not changed since privatisation. This involves running a financial model to check that the price determined allows an efficient company to recover the economic costs of providing the service, and that in parallel this company can secure finance at each point of the price control period. Ofwat uses a range of financial measures to assess financeability – gearing, interest cover, adjusted cash interest cover, funds from operations/ net debt, dividend cover, retained cash flow (RCF)/net debt, return on capital employed, return on regulated equity. Ofwat has not published targets for companies, rather it has assumed that companies will ensure that their plans are financeable. In PR19 however, Ofwat introduced a novel requirement for companies with gearing levels above 70% to propose a financing outperformance sharing mechanism (i.e. a mechanism that shares with customers potential gains obtained out of leveraging at rates significantly higher than the notional gearing rate). These companies are free to propose their own sharing mechanism, but Ofwat has put forward the following "illustrative" scheme: • There is a 5% deadband above the notional gearing level of 60%. • The mechanism would share 50% of the difference between notional nominal cost of equity to actual nominal cost of debt for the proportion of gearing that is above the deadband. Interestingly, this new financing incentive mechanism has been introduced in conjunction with other changes that could be branded as "more intrusive than usual practice" such as the new requirements for companies to set out in their business plans their policies for performance-related executive pay and dividend distribution. The rational for introducing these new financing incentive mechanisms, as well as the new requirements on information regarding executive pay and dividends, seems to be based on a general perception from the public that some companies are profiting at their expense from financial engineering. In the words of Ofwat's chairman: "Corporate behaviour of some water companies has diminished trust in the delivery of this most vital service. Some companies are seen as focused on financial engineering at the expense of public service".[246] Ofwat has a special administration regime in place in the event that a company fails.[247]
How does the regulator measure success?	As discussed above, Ofwat's regulatory regime is today less prescriptive than ten years ago in terms of what is considered successful. Today in the context of the new outcomes approach companies, in consultation with clients, have opportunity to define what success means, how it is measured and how it is rewarded or penalised. However, there is still clear guidance from Ofwat, and more broadly from Defra, on what success means as the key outcomes are still defined by Ofwat as "compulsory outcomes".

[244] Ofwat (2017f), *Delivering Water 2020: Our final methodology for the 2019 price review - Appendix 1: Addressing affordability and vulnerability*, December.

[245] Ofwat (2017a), December, page 29.

[246] Cox, Jonson (2018), *Letter from Jonson Cox to The Secretary of State for Environment, Food and Rural Affairs*, April.

[247] Ofwat (2015c), *Our review of our processes and procedures for when a company may be in financial distress*, October.

Topic	Details
	Note that the traditional hard requirements written down in legislation and licence conditions (e.g. regarding water quality) also remain in place, as does the general objective of productive efficiency which is incentivised by the RPI-X cap. In addition, there are long term objectives (or at this stage just questions) that may not be yet incorporated into a clear-cut incentive scheme but that there is some sort of consensus that the industry needs to start thinking about to be prepared for the future. Some of these objectives / questions are for example: How to achieve, in thirty years' time, zero leakage in a sustainable way, zero interruptions to water supplies 100% compliance with drinking water standards (at point of use), and zero uncontrolled discharges from sewers?[248]
Any other relevant points	**Innovation funding** Ofwat is in the process of launching a £200m innovation fund available for companies during the 2020-25 regulatory period. Through the introduction of innovation funding and an innovation competition, Ofwat aims to drive collaboration across the water sector and beyond. The innovation funding and competition is being designed to complement Ofwat's existing PR19 framework (e.g. will fund activities that are not funded or otherwise incentivised through the price review). This means that there is likely to be little direct interactions between the innovation competition and Output Delivery Incentives (ODIs) or efficiency incentives. The key principles (currently under consultation) of the innovation found are:[249] • Innovation is not just about the development of new technologies. Innovation can also be developed by doing things differently and having the right systems, processes and people to support activities. A wide range of innovation proposals are encouraged, addressing the big challenges facing the sector and taking into account the strategic priorities and objectives of the UK and Welsh governments; • The purpose of the innovation competition is to drive transformational innovation that companies would not otherwise explore or invest in; • Proposals should be just as much about the roll-out of innovations at scale as the early incubation of new ideas and solutions. Where appropriate, Ofwat expects companies to set out clear plans for rolling out innovations funded through the competition across their and other companies' areas; • Innovation fostered through the innovation competition must provide public value for all customers in England and Wales, although the benefits for some customers may in some cases be indirect (e.g. from the sharing of findings across the sector where projects are not successful); • Companies will be required to demonstrate their commitment to innovation competition projects and ensure risks are appropriately shared between customers and shareholders. This could be for example through a minimum contribution of 10% of project bid costs; • The innovation competition will run during the period 2020-2025 period, though some projects may extend beyond that period. Ofwat will review the effectiveness of the competition at least at the end of the period, and as required during the period; • Companies will need to provide evidence of how they are working together and with others (including other water companies, their supply chain, companies in other sectors), and/or a commitment to transparent sharing of progress and findings with others within the sector and beyond; • There will be an open-by-default approach to data and learning generated through customer-funded activities, including where projects have been unsuccessful. Ofwat has also called on the sector to develop a Joint Innovation Strategy. Ofwat considers that the Strategy should be an opportunity for companies to:

[248] UKWIR (2019), "The big questions facing the water industry".

[249] Ofwat (2020).

Topic	Details
	• *"Define clear roles and responsibilities – rethinking the current architecture and rationalising activities in this space to enable more effective collaboration and coordination;* • *Identify innovation gaps and opportunities – come up with a map of the innovation landscape, including new and different potential sources of funding, and opportunities across sectors;* • *Prioritise activities that will provide significant benefits to customers and the environment across England and Wales, and possibly beyond."*[250] Ofwat wants companies to better engage across the supply change and to explore opportunities to use open (and big) data to help identify benefits for consumers. The joint approach could also enable the roll-out of large scale innovations.

[250] Ofwat (2020), pages 28-29.

Appendix D WATER INDUSTRY COMMISSION FOR SCOTLAND (WICS)/ WATER

Topic	Details
Overview	The regulatory framework of the Scottish water industry can broadly be defined as a price cap regime where the regulator WICS sets charge caps for a single regulated company, Scottish Water, using a building block approach. Since the 2015-21 Strategic Review of Charges (SRC15), the framework is characterised by the presence of a Customer Forum (the Forum) tasked with seeking an agreement with Scottish Water on their business plan. This has transformed the price control into a negotiated settlement process. If Scottish Water and the Forum reach an agreement, WICS accepts this as its determination. Otherwise, the regulator steps in and makes its own determination. The 2021-27 price control (SRC21) has a strong long-term focus. Scottish Water is expected to conduct an investment program that will put it on track to achieve net zero emissions by 2040. To allow this, WICS intends to make specific allowances for long-term asset replacement and the inclusion of emissions in capex appraisals. This requires the introduction of forms of financial flexibility such as ring-fenced allowances that could become available to Scottish Water as its investment needs develop over time. WICS is seeking to move the regulatory framework away from the 'hard budget constraint' approach that traditionally characterises economic regulation, introducing flexibility to consider longer-term and wider economic costs, such as emissions.[251] WICS's view on the appropriate range for charges reflects long-term challenges and it is not about minimising charges in the next regulatory control period and leaving future customers to pay higher prices.[252] As WICS explains: *"Traditional economic regulation establishes a regulatory contract which the regulated utility agrees to deliver. As such the regulatory relationship is similar to that of a parent and a child. There is a consequent risk that the regulated utility lacks ownership of its strategy and, for example, cites lack of regulatory funding as a reason for not having done something."*[253] To overcome these issues, WICS adopted the principles of Ethical Based Regulation (EBR). The EBR is based on a more open and collaborative relationship with the regulated company. As long as the company can explain what it is doing and why, the regulator will not seek to micro-manage its performance, intervening only if the company deviates from a reasonable path.[254]
Regime type	The Scottish water industry is subject to a price cap regime. WICS sets the prices for water and sewerage services that deliver ministerial objectives for the water industry at the 'lowest reasonable overall cost'. The price setting process, also known as SRC, takes place every six years.[255] WICS follows a building block approach, i.e. the charge caps are based on a revenue requirement calculated by summing the allowed expenditure on a number of activities. In

[251] WICS (2020), *Strategic Review of Charges 2021–27 Final Decision Paper: prospects for Prices*, February, p. 11.

[252] WICS (2020), p. 4.

[253] WICS (2020), p. 18.

[254] WICS (2020), p. 22.

[255] WICS, https://www.watercommission.co.uk/view_Our%20role%20and%20remit.aspx. Accessed 25 May 2020.

Topic	Details
	SRC15, these activities were operating expenditure, capital maintenance expenditure, and total enhancement investment, plus an end-of-period cash balance.[256]
Industry structure	Scottish Water is a public sector body,[257] established in 2002 as the only provider of water services in Scotland following a merger of the country's three water authorities.[258] The Water Services etc. (Scotland) Act 2005 opened non-domestic water services to competition between Licensed Providers. Scottish Water retained sole responsibility for treatment and distribution on the public water network, but is now required to provide these services as a wholesaler to either its own separate non-domestic retail function (known as Business Stream) or another of 30 competing Licensed Providers.[259] Business Stream also competes in the English market for non-domestic services.[260]
Price control process	The price control process centres on the negotiations between Scottish Water and the Customer Forum. However, the negotiations are informed by a series of decision papers published by WICS, that aim at building a common understanding of the regulator's view on the challenges the industry is going to face in the coming years and the key parameters for the price control.[261] In addition, the Scottish Government provides a policy framework for the price control through its Principles of Charging and Investment Objectives. Taking SRC21 as an example,[262] the process opens with WICS publishing a methodology document and a set of decision papers. This initial documentation was published almost three years in advance of Scottish Water's Strategic Plan. Scottish Water then publishes strategic projections for consultation, setting out its long-term plans in accordance with WICS's directions.[263] After accumulating new evidence, WICS issues a set of revised decision papers[264] and clarifications on aspects of its methodology, followed by a Final Decision Paper where WICS clearly sets out ranges for a small number of key parameters on which Scottish Water and the Customer Forum are expected to reach an agreement that will determine the charge caps for the next regulatory period. In SRC21, these parameters are: • a targeted annual investment of between £1.0 and £1.1 billion by 2040; • an annual efficiency challenge of between 0.75% and 1.5% for expenditure on operations (including repairs and routine maintenance), financing and PPP management; and • an annual allowance of between £0 and £150m for potential additional cash outlays that could result from including emissions in appraisals.[265] Scottish Water and the Forum then enter negotiations on the company's strategic plan and associated charges. If the parties reach an agreement, this becomes WICS's draft determination. If no agreement is reached or WICS considers that the agreement is inconsistent with its decision papers or the Principles of Charging and Investment

[256] WICS (2014a), *The Strategic Review of Charges 2015-21: Draft Determination*, March, p. 37.

[257] Scottish Water (2019), *Annual report & accounts 2018/19*, p. 6.

[258] Audit Scotland (2015), *Overview of the water industry in Scotland*, October, p. 4.

[259] Audit Scotland (2015), p. 12.

[260] Scottish Water (2019), p. 38. Scottish Water also provides non-regulated services such as wastewater treatment under its Scottish Water Horizons brand.

[261] WICS (2020), p. 7.

[262] WICS (2020), p. 15.

[263] WICS (2018a), *2018 Decision paper 1 – Scottish Water's Strategic Projections: A summary of our current thinking*, July, p. 3.

[264] WICS (2020), p. 8.

[265] WICS (2020), p. 2.

Topic	Details
	Objectives set by the Ministers, the Commission prepares a Draft Determination based on its final decision papers.[266] WICS has moved away from the creation of individual measures to encourage innovation. Instead it is asking Scottish Water to propose its capex allowance. The onus is then placed on Scottish Water to justify the extent that it is using innovative approaches. This expenditure will be assessed by the Customer Forum, but also by the Output Monitoring Group (OMG).[267] WICS consider that this will (1) make Scottish Water think hard about how it incorporated innovation in its operations; and (2) required Scottish Water to communicate its initiatives with its customers.[268] The process ends with WICS publishing its draft and, after consultation, final determination. Regulatory arrangements do not explicitly include a fast tracking process. However, Scottish Water is encouraged to reach an agreement with the Customer Forum on its business plan and proposed charges, as this is likely to result in a draft decision by WICS that merely ratifies the position negotiated by the company with the Forum.[269] In other words, Scottish Water can avoid inviting additional scrutiny from the regulator by putting forward a business plan that aligns with policy and regulatory directions from WICS and the Ministers and is deemed to be in the interest of customers.
Role of customers and other stakeholders	**The Customer Forum** Customer preferences are formally incorporated into the price control through the action of the Customer Forum. The Forum was established in 2011 by WICS, Scottish Water, and Consumer Focus Scotland) to understand customer priorities and ensure they were reflected in the SRC15 process. One year later, the Forum was tasked with seeking an agreement with Scottish Water on the company's business plan, effectively transforming SRC15 into a process of negotiated settlement.[270] WICS was heavily involved in the process and provided the Customer Forum with advice on efficient expenditure levels.[271] WICS's determination was based on the agreement reached between Scottish Water and the Forum.[272] The Forum's minutes and agreed changes were made publicly available for stakeholders to review and comment on as part of WICS draft and final determinations. In 2017, the Forum has been re-engaged in the same capacity in SRC21 to achieve the highest possible level of customer and community focus within Scottish Water's practices. The Forum holds an influential position in the SRC process, as WICS indicated that it is minded to accept Scottish Water's proposed business plan if the company agreed it with the Forum.[273] The Forum consists of a Chair and nine members from different professional backgrounds, such as the water industry, consumer affairs, environmental affairs, public policy, business,

[266] WICS (2017), *Innovation and Collaboration: future proofing the water industry for customers - Methodology for the Strategic Review of Charges 2021-2027*, April, p. 105.

[267] The OMG is made up of Sottish Water, the Water Industry Commission for Scotland, the Drinking Water Quality Regulator, the Scottish Environment Protection Agency and the Consumer Futures Unit of Citizens Advice Scotland.

[268] WICS (2017), page 50.

[269] WICS (2020), p. 6.

[270] Customer Forum (2015), *Legacy report: Lessons learned from customer involvement in the 2015-2021 Strategic Review of Charges*, February, p. 5.

[271] WICS, https://www.watercommission.co.uk/view_CustomerForum.aspx. Accessed June 2020

[272] WICS (2014a), p. 6.

[273] Customer Forum (2017), *Statement of Purpose and Work Plan*, August, p. 1-2.

Topic	Details
	and academia,[274] selected for their breadth of expertise. The Forum is not meant as a representative body of customer types and is expected to devote time and resources to establishing what customer priorities are and, based on these insights, ensure that Scottish Water's business plan reflects customer interests. For this purpose, the Forum coordinates customer research activities with Scottish Water and other stakeholders but can also undertake its own research.[275] The Forum's work plan is set out in WICS's initial methodology document for SRC21.[276] At the initial stages of the price control process, the Forum participates in discussions with WICS on key issues for the price control and longer-term prospects for the water sector. The Forum also participates in regular joint stakeholder meetings that involve Scottish Water, the Scottish Government, the Scottish Environment Protection Agency (SEPA, Scotland's environmental regulator), the Drinking Water Quality Regulator for Scotland (DWQR), and Citizens Advice Scotland (CAS). After WICS has issued its decision papers on the price control and Scottish Water published its strategic plan, the Forum enters negotiations with the company on its business plan. The negotiations must have regard of the parameters set by WICS and the policies set by the Ministers and are informed by customer research. The negotiations cover various topics, such as: • service levels, including services to businesses and rural communities and equity issues; • water quality and waste discharge standards; • performance measures; • water use, efficiency, and leakage; • customers' attitudes towards charges; • Scottish Water's efficiency and delivery of innovation; and • maintenance and capital spending requirements and inter-generational equity in Scottish Water's financing.[277] If Scottish Water and the Forum reach an agreement, this becomes WICS's draft determination. Otherwise, Scottish Water and the Forum separately set out their reasons for not reaching an agreement and WICS adopts a draft determination based on its decision papers. WICS then consults the Forum (and other stakeholders) again on the draft determination, before issuing its final determination. **Customer engagement** Scottish Water's strategic planning is informed by customer engagement and research initiatives co-commissioned by Scottish Water, the Customer Forum, and other stakeholders (WICS, SEPA, DWQR, and CAS). The engagement program for the 2020 strategic plan lasted two years and covered a wide range of topics, from services and charges to environmental issues. A mix of quantitative and qualitative engagement techniques was used, including online surveys, in-home interviews, focus groups, in-depth deliberative research, behavioural insights and an online chatbot tool.[278] **Other stakeholders**

[274] Customer Forum, https://www.customerforum.org.uk/about-us/the-forum/. Accessed 1 June 2020.

[275] Customer Forum (2017), p. 2.

[276] WICS (2017), p. 103-106.

[277] Customer Forum (2017), p. 4.

[278] Customer Forum and Scottish Water (2020), *SRC21 Strategic Plan Supporting Document: Customer Insight*, February, p.4.

Topic	Details
	The Scottish Government, CAS, SEPA and DWQR are involved at various stages of the price control process: • The Scottish Ministers set out high level pricing principles and investment objectives that act as guidelines for WICS's decision papers and the negotiations between Scottish Water and the Customer Forum. The Ministers draft the pricing principles in consultation with WICS, SEPA, DWQR, and CAS. [279] • The Scottish Government, SEPA, DWQR, and CAS also meet with WICS to discuss key issues for the price control and longer-term prospects for the water sector. • Customer engagement used to inform Scottish Water's business plans is co-commissioned by the company, the Customer Forum, WICS, SEPA, DWQR, and CAS. More broadly, these stakeholders have contributed to shaping the regulatory framework. The Customer Forum, for example, was formed following an agreement between WICS, Scottish Water, and Consumer Focus Scotland (now CAS). The Investment Planning and Prioritisation Framework (IPPF), introduced in SRC21 to guide the development of Scottish Water's capex program, was co-created by Scottish Water, the Scottish Government, the Customer Forum, CAS, DWQR and SEPA. [280] The IPPF is characterised by regular interaction between Scottish Water and stakeholders to identify and prioritise the company's investment needs.
Pricing	The Scottish Ministers set out the Principles of Charging in the lead-up to the SRC. The SRC21 Principles are: • Customers should have certainty about the maximum level of charges they will face over the regulatory period. • Charges should recover the full costs of providing services. • Charges for similar services provided to customers of a similar category should be the same across Scotland. • Charges should be broadly cost-reflective. For example, household charges for drinking water should be set to recover the cost of providing that service to that group as a whole.[281] Specific charge caps are set by WICS in terms of a permitted annual percentage increase in water charges.[282] In practice, household charges depend on whether the premises are fitted with a water meter. Unmetered charges are based on the Council Tax band that applies to the dwelling. Metered charges include a combination of fixed and volumetric charges. Household customers have to request the meter installation from Scottish Water, so unmetered charges are the default option.[283] WICS has regard to the impact on charges of the long-term level of investment required of Scottish Water to conduct its asset replacement program and respond to climate change. WICS suggested that charges should be transitioned over three regulatory periods, i.e. a relatively long period of around 18 years.[284]

[279] Scottish Government (2020), *Investing in and paying for your water services from 2021: Final Consultation – An invitation to provide your views on the final draft Principles of Charges and Ministerial Objectives*, January, p. 10 and 25.

[280] Scottish Water (2020), *Investment Planning & Prioritisation Framework ("IPPF") – SR21 Strategic Plan Supporting Document*, February, p. 3.

[281] Scottish Government (2020), p. 25-26.

[282] WICS (2014b), *The Strategic Review of Charges 2015-21 - Final determination*, November, p. 6.

[283] Scottish Water, Your Charges Explained: Scheme of Charges 2019/20, p. 4-5.

[284] WICS (2020), p. 8.

Topic	Details
	In its final decisions paper for SRC21, WICS considered that the three inputs to the price control that will have the most material impacts on price caps are investment for enhancement, growth and replacement, additional costs from including emissions in appraisals, and the efficiency challenge applied to operating expenditure.[285] WICS sets ranges for these inputs to guide negotiations between Scottish Water and the Customer Forum. However, WICS also sets out the average annual real change in charges that any combination of these inputs would require, providing a clear indication of the customer impact of the price determination.[286]
Approach to assessing efficient and prudent expenditure	**Capex** WICS has set out that it has adopted an EBR approach to setting efficient expenditure targets. WICS nots that: *"EBR requires candour in all conversations and interactions between the regulator and regulated company. It requires the regulated company to demonstrate to all of its stakeholders that it is operating effectively and efficiently. The focus of the regulator is now on how and why the money is spent. This contrasts with the previous focus on how much money was spent."*[287] It is not entirely clear what this will mean in practice when it comes to determining if Scottish Water's expenditure proposals are set at 'efficient' levels for why the money is being spent. In the lead-up to SRC21, Scottish Water provided broad ranges for average lifetimes and unit replacement costs of various asset categories, accompanied by an assessment of its confidence in the estimates.[288] On this basis the company estimated annual replacement liability ranges for short, medium, and long-life assets. The top ends of these ranges indicate the level of investment Scottish Water requires to have a high confidence that it can replace its assets.[289] WICS then proceeded to set a target total investment (before efficiency) of between £1,050m and £1,250m as the sum of: • Short and medium life assets replacement – £430m. WICS considered that Scottish Water's estimates were reasonable and used them to determine the allowance. However, the regulator considered that the company may have underestimated its replacement needs and decided to make an allowance at the top end of the estimated range. • Long-life asset replacement – £190m to £340m (also based on Scottish Water's analysis). • Enhancement expenditure to improve water and wastewater quality and fund future growth – £300m. • Future replacement needs arising from enhancement investment – £130m to £180m. WICS then applies an efficiency challenge of £50m to £150m, resulting in a target for total investment of between £1,000m and £1,100m per annum by 2040.[290] This range, which contributes to determining charges over the next six years, reflects longer term

[285] WICS (2020), p. 47.

[286] WICS (2020), p. 48.

[287] WICS (2019a), *2019 Decision Paper: Asset Replacement*, July, p.8..

[288] WICS (2019a), p.21-22.

[289] WICS (2019a), p. 23-25.

[290] WICS (2019a), p. 36.

Topic	Details
	considerations such as the ongoing replacement of long-life assets and the achievement of net zero emissions by 2040.[291] Scottish Water's detailed investment program for SRC21 will not be fixed at the start of the regulatory period but will build over time according to the new Investment Planning and Prioritisation Framework (IPPF).[292] The IPPF is characterised by regular interaction between Scottish Water and stakeholders, organised in an Investment Planning and Prioritisation Group (IPPG). Scottish Water will seek stakeholder input for the prioritisation of investment needs and, through quarterly meetings, seek the IPPG's endorsement for a proposed 'Development List' which will form the basis of the detailed design and delivery of the investment program.[293] **Opex** WICS set a range of £870m to £930m for operating, maintenance, financial and other expenditure (pre-efficiency), based on historic averages. This range includes 'tramlines' around the baseline allowance of +/- £30m.[294] the concept of tramlines is discussed in more detail below. WICS set out a range of between 0.75% and 1.5% per annum for the efficiency challenge that applies to operating, maintenance, financial and other expenditure. This is based on past improvements achieved in Scotland, England, and Wales.[295] In its SRC21 decision papers, WICS considered that Scottish Water could offer to ring-fence some proportion of its allowed investment expenditure until the company could demonstrate (through some form of external verification) that this would be delivered efficiently and in line with its long-term challenges.[296] This is relevant due to the long-term nature of Scottish Water's Strategic Plan, which is likely to require further work to understand the efficient timeframe and approach to asset replacement. Ring-fenced allowances for Scottish Water asset replacement would be released when the company can establish the amount it needs to spend and how it proposes to spend it and demonstrate progress in line with advice from an independent expert on asset management. [297] WICS also suggested that the allowance for additional cash costs of including emissions in appraisals (discussed in more detail below) could be ring-fenced in each year with its release subject to agreement with the IPPG.[298] **Financial tramlines** The regulatory framework includes 'financial tramlines' aimed at ensuring Scottish Water's financial stability while promoting the identification of outperformances for the purpose of sharing them with customers or reinvesting them to realise longer-term objectives (such as maintenance or resilience).[299] The tramlines are a set of performance thresholds comprising an upper limit and a lower limit that act as a ceiling and floor for a performance indicator, with a middle line between

[291] WICS (2020), p. 38.

[292] Scottish Water (2020), p. 5.

[293] Scottish Water (2020), p. 6-7.

[294] WICS (2020), p. 44.

[295] WICS (2020), p. 47.

[296] WICS (2020), p. 8.

[297] WICS (2018b), *Decision paper 5: Capital maintenance*, July, p. 6.

[298] WICS (2020), p. 46.

[299] WICS (2017), p. 29.

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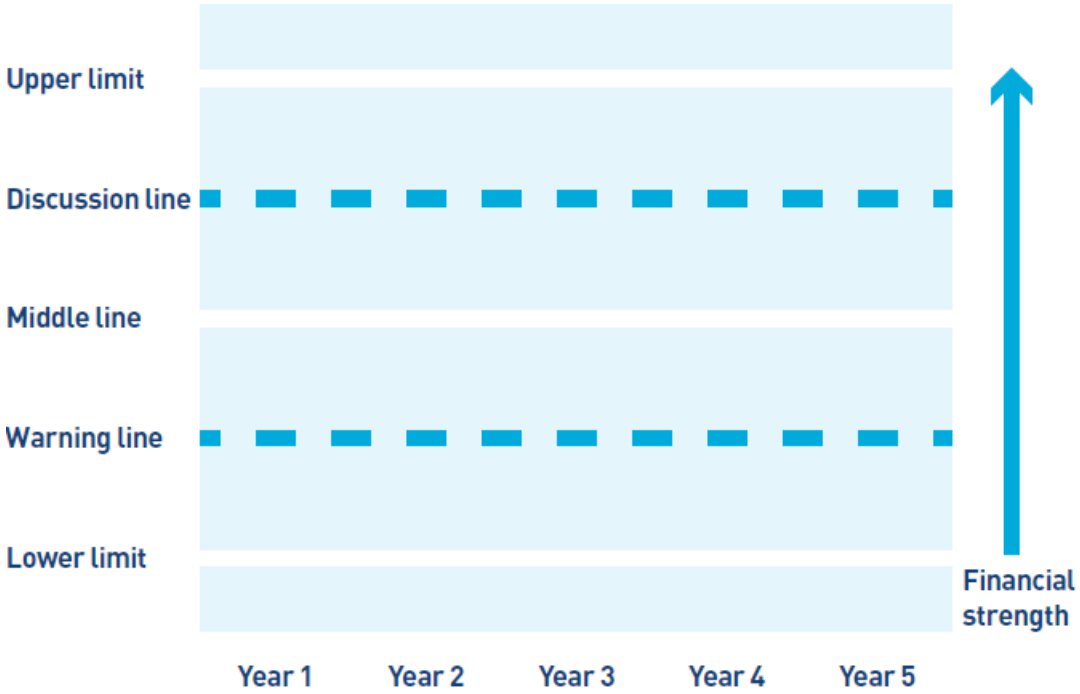
	the two. Between the middle line and the upper limit lies a discussion line. Similarly, a warning line lies between the middle line and the lower limit. The tramlines are symmetric, i.e. the upper and lower limits are equidistant from the middle line, and so are the discussion and warning line.[300] *Figure D.1: Financial tramlines*  *Source: WICS (2017), p. 68. The figure is for illustration purposes. Actual financial tramlines may not be constant over time.* The SRC15 tramlines were built on three financial ratios commonly used by rating agencies as indicators of financial strength: adjusted cash interest cover, funds from operations to debt, and gearing. WICS considered that using financial ratios that cover all expenditure, rather than a capex/ opex split, would avoid distortions in Scottish Water's investment decisions. [301] The middle line is the level of financial strength at which Scottish Water is broadly expected to begin and exit the regulatory period while maintaining relatively stable prices.[302] If during the price control Scottish Water outperformed its regulatory allowance, it would be free to retain the savings generated while its financial strength was below the discussion line. If outperformance put Scottish Water above the discussion line, with an expectation to remain above this level for the remainder of the price control, the company was expected to enter discussions with the Government and the Customer Forum on how the outperformance should be used. If Scottish Water reached and expected to remain above the upper limit, then a proportion of the outperformance agreed with the Forum at the start of the control period would automatically be shared with customers.[303] Scottish Water and the Forum agreed that outperformance below the upper limit would be shared at the discretion of Scottish Water, while outperformance above the upper limit

[300] WICS (2014a), p. 17.

[301] WICS (2017), p. 68-69.

[302] WICS (2017), p. 68.

[303] WICS (2014a), p. 18.

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	would be entirely shared with customers subject to the agreement of WICS and the Scottish Government.[304] Scottish Water performance against the tramlines had to be reported by the company in its annual Delivery Plan (with an explanation for any variation) and was also included in WICS's performance reporting.[305] In the lead-up to SRC21, WICS stated that it intends to continue using the tramlines but is reconsidering certain design elements: • WICS now considers that the tramlines should be set on the basis of cash balances, rather than in terms of financial ratios, to provide greater transparency to stakeholders. WICS will continue using the previous set of financial indicators as part of its ongoing regulatory monitoring. The tramlines will only cover recurring expenditure, such as operating and financial expenditure, while capital expenditure will be managed by the IPPG as discussed above. WICS considered that under the current design, short-term fluctuations in investment obscure the underlying performance that the tramlines are meant to measure.
Services and performance	**Service levels** WICS regulates the water and wastewater services provided by Scottish Water. Scottish Water's service levels must comply with the high-level quality objectives set out by the Scottish Ministers.[306] More detailed performance targets are agreed by the company with the Customer Forum. In SRC15, targets were measured in terms of:[307] • Overall Performance Assessment (OPA) – This composite indicator combines 17 service measures covering water quality, interruptions, pressure, leakage, sewer flooding, and pollution and sludge treatment.[308] • Household Customer Experience Measure (hCEM) – An indicator based on the number of customer contacts and the results of customer experience surveys.[309] • Overall Measure of Delivery (OMD) – An index tracking the delivery of the investment program over the regulatory period. • Level of leakage in million litres per day. **Incentive mechanisms around performance levels** The performance measures discussed above are not directly tied to any incentive mechanism. However, they are published yearly by WICS,[310] providing the company with a reputational incentive. In addition, Scottish Water is required to make payments to customers, either automatically or following a claim, in relation to events such as water quality alerts, interruptions, and

[304] Scottish Water (2014), *Always serving Scotland: business plan 2015 to 2021 - Appendix 18: Minute of agreement*, March, p. 7.

[305] WICS (2017), p. 69.

[306] See for example Scottish Government (2014), *The Scottish Water (Objectives: 2015 to 2021) Directions 2014*, October, p. 4.

[307] WICS (2019b), *Scottish Water's performance 2018-19*, p. 3.

[308] Scottish Water, *Delivery Plan 2015 to 2021*, p. 8-9. OPA was originally developed by Ofwat to compare water companies and was adopted by WICS to compare Scottish Water to its peers in England and Wales. While OPA is no longer used by Ofwat, it was retained as a measure of Scottish Water's performance. See WICS (2014a), p. 15.

[309] WICS (2015), *Information Note 7: Measuring customer service*, August, p. 4.

[310] WICS (2019b), p. 3.

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	sewer flooding, as well as customer service shortcomings such as not answering complaints promptly.[311] **Performance monitoring** Every year, WICS publishes performance reports tracking Scottish Water's performance against its performance targets. The reports also track the company's opex, capex, and financial strength measured in terms of cash interest cover and FFO to net debt. Scottish Water's performance is also monitored by the Delivery Assurance Group (DAG), which includes representatives from DWQR, SEPA, CAS, SPSO, Scottish Water, the Scottish Government, and WICS. [312] The DAG uses the OMD to measure Scottish Water's quarterly progress against its targets. The OMD is a composite indicator of progress towards target investment outputs in multiple key areas of delivery. In addition, the DAG monitors Scottish Water's delivery of late projects from previous controls.[313] The DAG publishes its OMD assessment in quarterly reports, which also provide a more granular assessment of progress against specific output targets (e.g. water quality and environmental protection) and remedial action proposed by the company in areas where it is tracking behind its objectives.[314]
Competition	The retail market for water and wastewater services to non-domestic customers is open to competition between Licensed Providers. Scottish Water remains the only wholesaler. While WICS is the licensing authority for the non-domestic market, a separate entity, the Central Market Agency, oversees the market, including by ensuring the transfer of customer information between suppliers and calculating the payments due by each Licensed Provider for Scottish Water's wholesale services.[315] Scottish Water has a non-domestic retail branch (known as Business Stream) that competes with the other Licensed Providers. To prevent discriminatory conduct against competing suppliers, Business Stream's licence is accompanied by ring-fencing directions that require Scottish Water to: • maintain independent managerial and operational functions; • establish systems that regulate access to its facilities, equipment, data; and • manage its transfer of personnel to the licensed provider.[316] The same regulations also prohibit intra-group contracts (except on terms agreed by WICS) and intra-group cross-subsidies.[317]
Other incentive mechanisms	We have not been able to identify other relevant incentive mechanisms.
Protecting the environment	The investment objectives set out by the Scottish Ministers, which the agreement between Scottish Water and the Customer Forum must be consistent with, require Scottish Water to

[311] Scottish Water, 'Our service standards' leaflet, https://www.scottishwater.co.uk/help-and-resources/document-hub/factsheets-and-leaflets/leaflets. Accessed 1 June 2020.

[312] DAG Working Group (2020), *Draft Delivery Assurance Report: Quarter 3 2019-20*, March, p. 1.

[313] DAG Working Group (2020), p. 2.

[314] DAG Working Group (2020), p. 7-10.

[315] WICS, https://www.watercommission.co.uk/view_Whos_who_in_the_market.aspx. Accessed 2 June 2020.

[316] WICS (2008), *Water Services (Intra-Group Regulation) (Amendment) Directions 2008*, para. 3.

[317] WICS (2008), para. 4.

Topic	Details
	develop investment plans that address environmental risks from its assets and to implement climate change adaptation and mitigation measures.[318] While the high-level policy framework is decided by the Scottish Ministers, WICS appears to have a broad mandate for ensuring that its regulatory supervision takes into account environmental considerations and longer-term strategies. This is evidenced by the long-term focus of WICS's decisions. WICS considers that the 'hard budget constraint' that characterises traditional forms of economic regulation (i.e. cash available to the company is constrained over the regulatory period) incentivises cost reductions and protects customers from overspending, but tends to promote strategies that minimise short-term cash outlays, without appropriate consideration of longer-term impacts and non-cash costs such as emissions.[319] In WICS's decision papers, these objectives translate into a strong focus on longer-term environmental considerations: • Estimates of asset replacement needs depend on assumptions on costs and remaining asset lives that are to some extent uncertain. In its assessment of Scottish Water's short and medium term asset replacement program (which constitutes a significant part of the company's investment) WICS considered that it is prudent to set an investment target that gives Scottish Water a high degree of confidence that these assets can be replaced in a timely manner, given their contribution to the network's environmental performance.[320] Therefore, WICS adopted the top end of Scottish Water's estimate of the annual replacement liability as the basis for the company's investment target.[321] • WICS includes £300m for 'enhancement and growth' in the company's annual investment target, to improve water quality, fund future growth and meet the net zero carbon emissions target by 2040.[322] • Scottish Water is required to include emissions in its appraisal of capex interventions, which may result in the company adopting solutions that have a higher cash cost than if it did not have to consider emissions. While Scottish Water stated that it would seek to absorb such additional cash costs,[323] WICS considered it prudent to make an allowance for them and required Scottish Water and the Customer Forum to agree on an annual amount of between £0 and £150m for this purpose, suggesting that a sum in the upper half of the range may be more appropriate.[324]
Vulnerable customers	Under the Water Charges Reduction Scheme (WCRS), all unmetered dwellings that receive a Council Tax Reduction (CTR) can benefit from a reduction of water charges of up to 30% of the CTR.[325]
Maintaining economic and financial sustainability	In addition to being an outperformance sharing scheme, the financial tramlines introduced in SRC15 are a mechanism to detect and deal with underperformance that threatens the company's financial strength. If Scottish Water performance fell below the warning line, it

[318] Scottish Government (2020), p. 37-39.

[319] WICS (2020), p. 11.

[320] WICS (2019a), p. 5 and p. 40.

[321] WICS (2019a) See p. 25 for Scottish Water's analysis and p. 35 for WICS's analysis.

[322] WICS (2019a), p. 33. The document refers to net zero emissions by 2045, but the target is now set to 2040 (see WICS (2020), p. 38.

[323] WICS (2020), p. 46.

[324] WICS (2020), p. 2-3.

[325] Scottish Government (2020), p. 30.

Topic	Details
	would have to explain in its next annual Delivery Plan how and when performance would improve.[326] If financial strength fell below the lower limit for at least two of the three indicators, WICS would review Scottish Water's performance and take remedial action including, for example, a reduction in the capital investment program, an increase in customer charges or a revision of the financial tramlines.[327] As discussed above, WICS is proposing amendments to the tramlines design, but intends to keep them as part of the SRC21 the regulatory framework. Financial ratios will also remain as part of WICS's monitoring.
Any other relevant points	The presence of a single regulated company may have been a key factor in the shift towards a negotiated settlement approach, which requires a significant commitment from the regulator to inform the Customer Forum positions.[328]
How does the regulator measure success?	WICS's SRC21 methodology includes a discussion of 'what success will look like' under the approach proposed for the price control, although this appears to be mainly around high-level outcomes of the regulatory framework.[329] The SRC21 methodology document also includes a discussion of what has worked well in SRC15 and what could be improved. For example, WICS considers that the financial tramlines introduced in SRC15 provided an indication of financial strength and gave Scottish Water assurance that if it operated efficiently it would be funded appropriately. However, WICS recognises that the financial tramlines did not work as well as intended as a basis for discussion between Scottish Water and stakeholders on how to deploy the savings from outperformance. WICS considers that the use of financial ratios reduced transparency and the cyclical nature of investment made it hard to understand Scottish Water's underlying performance. WICS is proposing amendments to the tramlines to address these shortcomings.[330]

[326] WICS (2012), *Our initial expectations: Note 7 for the Customer Forum – Financial tramlines*, November, p. 3.

[327] WICS (2012), p. 3.

[328] Heims and Lodge (2016), page 23.

[329] WICS (2017), p. 7, 36, 42, 50, 63, and 71.

[330] WICS (2018c), *Decision Paper 7: Financial tramlines*, November, p. 6.

Appendix E AUSTRALIAN ENERGY REGULATOR (AER) AND THE AUSTRALIAN ENERGY MARKET COMMISSION (AEMC)/ ENERGY NETWORKS

Topic	Details
Overview	Within the National Electricity Market (NEM), responsibilities for the regulation of electricity networks are split between the **Australian Energy Market Commission** (AEMC) and the **Australian Energy Regulator** (AER). The AEMC is responsible for determining the National Electricity Rules (NER) and providing policy advice to ministers. The AER has responsibility for rule enforcement and the economic regulation of network service providers (NSPs). There are currently 13 distribution network service providers (DNSPs) and 5 transmission network service providers (TNSPs), whose operations in the NEM are regulated by the AER. There is a mixture of public and private ownership, depending on the jurisdiction. In this case study we focus primarily on arrangements for DNSPs, highlighting differences in the approach for TNSPs where this appears particularly relevant to the areas of interest for IPART. The AER sets the annual revenue allowance that NSPs can recover from the provision of regulated services during the five–year regulatory control period. The revenue cap for each NSP is based on a standard post-tax building blocks model, overlaid with additional incentive adjustments. Recently, the AER has been exploring potential changes to the regulatory arrangements that would place more weight on direct negotiations between the NSPs and customer representatives.
Industry structure	There are currently 13 DNSPs and 5 TNSPs whose operations in the NEM are regulated by the AER.[331] Victoria, New South Wales and Queensland have multiple networks, with a monopoly provider for each defined distribution network area. The other NEM states are served by a single DNSP. [332] At the transmission level, there is one TNSP for each NEM region. Depending on the jurisdiction, there is a mix of public and private ownership structures, across both electricity transmission and distribution. The monopoly transmission and distribution functions are vertically separated from electricity generation and retail activities. In some states, ownership of electricity networks overlaps with competitive functions, requiring ring-fencing arrangements for operational separation. For example, Ergon Energy, a state-government owned network, provides both distribution and retail services in regions outside south-east Queensland. A framework for the economic regulation of electricity networks in the NEM is established by the National Electricity Rules (NER) and National Electricity Law (NEL). Within this framework, responsibility for electricity network regulation is divided between the AEMC (rule maker) and the AER (rule implementer): • The AEMC's primary responsibility is to make and amend the NER. Rule change proposals may not be instigated by the AEMC (except in very limited circumstances), but rather initiate with other regulatory bodies, market participants or other interested parties. • The AER undertakes economic regulation of electricity networks operating in the NEM, determining the allowable revenue they may recover for the provision of regulated services. Other regulatory functions include network tariff compliance reviews (including compliance with cost-reflectivity principles) and the development of ring-fencing arrangements where networks provide both contestable and regulated services. In addition to the NEL and NER provisions, TNSPs and DNSPs are subject to other national and state regulation including: network reliability standards (shaping network development and

[331] Within the NEM, there are also three interconnectors that fall within state networks, two regulated stand-alone interconnectors and one unregulated interconnector.

[332] Alongside the major networks, sites such as apartment blocks, retirement villages and caravan parks are served by small embedded distribution networks. The revenues of embedded networks are not regulated.

Topic	Details
	investment); licence conditions (which set out a range of obligations, including consumer protection measures); and other environmental and planning regulation.
Regime type	**Regulatory objective** The regulatory objective of the NEL is to promote efficient investment in, and operation and use of, electricity services for the long term interest of consumers with respect to 1) price, quality, safety and reliability and security of supply, and 2) the reliability, safety and security of the electricity system. **Revenue cap** The AER seeks to achieve this objective through an incentive-based regime, that sets a **revenue cap** for the NSPs over a five-year regulatory period. The NER requires the AER to set a revenue cap for transmission networks and this has been the case since at least 2004.[333] This is not the case for distribution networks where the NER allows the AER to choose the form of control, choices include a revenue cap, a price cap, average revenue cap or any combination. The AER considers which control mechanism to apply to distribution in their Framework and Approach[334]. The AER has opted to apply a revenue cap to the majority of distribution services ("standard control services"). The AER made three observations in support for applying this form of control: • The AER considers that a revenue cap provides the highest likelihood of efficient cost recovery. Under a revenue cap revenue recovery is fixed and unrelated to energy sales. Distributors costs are also largely fixed and unrelated to energy sales. In addition, if the mechanism depends on energy sales there is an incentive to understate forecast energy sales to gain revenues above efficient costs. • Within a regulatory control period average revenue caps or price caps deliver more price stability. However, across regulatory controls periods a revenue cap leads to more stable prices. A regulated entity should only collect efficient revenue and average revenue caps or price caps may lead to a larger divergence that needs correcting in the following control period. • The AER considers a revenue cap to provide better signals to distribution companies to undertake demand side management. Under a revenue cap within a control period a distribution company can improve its financial position by reducing costs. If a distribution company's revenues are linked to volumes, through a price cap or average revenue cap, than demand management may not be attractive as it reduces volumes and by extension revenues. The AEMC observed that a revenue cap shifts demand forecast onto customers.[335] They suggest that as a company no longer needs to consider this risk this might lead to lower network costs. They also suggest that it might be appropriate to shift this risk onto customers as networks have to meet fixed reliability standards. However, as this risk is shifted from the company this should be reflected in a lower allowed rate of return. **Building blocks model and adjustments** The revenue cap for each NSP is based on a standard **building blocks model**, overlaid with additional **incentive** adjustments: • The post-tax **building block model** assesses each network's efficient costs to provide the regulated services, including estimation of capital expenditure (and the regulated asset base), operating and maintenance costs, depreciation, taxation, and a return on capital (updated annually to reflect changes in the cost of debt). This sets a cap on the maximum revenue that a network can recover during the regulatory period.[336]

[333] ACCC (2004), *Statement of principles for the regulation of electricity transmission revenues – background paper*.

[334] AER (2017), *Framework and Approach, Ausgrid, Endeavour Energy and Essential Energy*.

[335] Parliament of Australia (2016), The performance and management of electricity network companies – Interim Report.

[336] For distribution, the AER may apply either a revenue or price cap.

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	• In addition to the building-block assessment of total efficient investment, network businesses must also undertake **cost-benefit analysis** of large individual projects through the regulatory investment test (RIT) process. This requires the NSPs to take into account other credible options, including non-network solutions (i.e. alternatives to capital expenditure to replace or augment the network). • Under the operating cost **efficiency benefit sharing scheme** (EBSS) and **capital expenditure sharing scheme** (CESS), outperformance (or underperformance) is partially shared with customers, incentivising networks to make efficiency gains. The CESS combines with ex-post assessments that allow the AER to exclude inefficient or imprudent capital expenditure from the regulated asset base. • A **service target performance incentive scheme** (STPIS) operates for both transmission and distribution networks and is intended to balance the EBSS so that expenditure is not reduced at the expense of network performance. • In 2015 the AEMC finalised a rule change providing for a **demand management incentive scheme** (DMIS) - rewarding implementation of efficient non-network options to manage demand – and a **demand management innovation allowance** (DMIA) - providing R&D funding for pilot projects. • The AER is currently consulting on the introduction of a **customer service incentive scheme** (CSIS). Within this overall framework, the regulatory arrangements have evolved over time. For example, the Better Regulation reforms resulted in a number of changes impacting network regulation, including: an increased focus on **customer engagement** in regulatory reviews (e.g. establishment of Consumer Challenge Panel, publication of consumer engagement best practice guidelines); stronger AER powers to assess and amend revenue proposals (e.g. use of **benchmarking**); a common approach to setting the **cost of capital**; and efficient investment **incentives** (e.g. sharing efficiency gains, ability to exclude imprudent or inefficient capex from the regulated asset base). The AEMC's Power of Choice review aimed to enhance consumers' ability to actively manage their electricity consumption through better information, services and price signals. The review led to a number of rule changes, including the requirement for **cost-reflective distribution tariffs** to be developed, opening metering services to **competition**, allowing consumers to more easily access their consumption data and incentivisation of demand management. These aspects of the regulatory regime are covered in more depth in the following sections.
Price control process	Broadly, the revenue determination process follows as an 'accept, replace' model. The AER's determination process commences approximately three years before the new regulatory period commences. At the start of the process, the AER undertakes early stakeholder engagement to set a framework and approach (F&A) for the regulatory review. Among other things, the F&A determines which distribution services the AER will regulate, the pricing mechanism for regulated distribution services and the incentive schemes that will apply to both TNSPs and DNSPs. Once the F&A is established, the NSP prepares and submits its regulatory proposal to the AER for assessment. As part of its engagement on the proposal, the AER publishes an issues paper setting out a 'first pass' assessment and preliminary views on the proposal. The issues paper is intended to assist stakeholders who wish to make a submission. The AER will then publish a draft determination, taking stakeholder views into account. At this stage, stakeholders are able to make submissions on the draft determination and the business can revise its proposal. The AER has 15 months to formally assess revenue proposals, before releasing a final decision on the maximum revenue that an NSP can recover through network charges. Network businesses then set their charges by allocating the allowed revenue across the customer base. Each NSP prepares a tariff structure statement (TSS – see Pricing below), which is reviewed by the AER as part of the regulatory process. As we discuss in the next section, the AER has been considering changes to the determination process to reflect a more direct role for negotiation between customers and DNSPs.

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	Parties can seek a judicial review of AER decisions on the NSPs' revenue allowances. Up until October 2017, parties could also apply to the Australian Competition Tribunal for a limited merits review (LMR) of AER decisions. The LMR process was abolished in October 2017, in light of the Australian Government's concerns that the LMRs allowed networks to 'cherry pick' favourable aspects of regulatory determinations, to the detriment of energy consumers. As a result, networks can no longer seek a review of discrete elements of an AER decision.
Role of customers	The regulatory framework provides for consumer input into the AER's decision making through the **Consumer Challenge Panel** (CCP), as well as through public forums and submissions during price control reviews. The CCP was established in 2013 as part of the Better Regulation reforms. The CCP's core role includes advising the AER on: (i) whether networks companies' revenue proposals are in the long-term interest of consumers; (ii) the effectiveness of the networks' customer engagement activities; and (iii) how customer engagement is reflected in the proposals. The AER is currently reviewing the CCP established for the 2016-20 period.[337] Under the NER, the AER's assessment of network companies' revenue proposals must consider whether forecast expenditure addresses the concerns of electricity consumers. To this end, revenue proposals must include details on how NSPs have engaged with consumers and how concerns identified through the engagement process have been addressed. In 2013 the AER issued a set of **best-practice guidelines** to inform the NSPs' customer engagement approach, in line with the following principles: clear, accurate and timely communication; accessible and inclusive; transparent; and measurable. The AER does not otherwise prescribe how customer engagement should take place. While the AER considers whether regulatory proposals have regard for customer engagement, there are currently no financial or other process incentives (such as fast-tracking) in place, as have been implemented in other jurisdictions. However, the AER has recently been encouraging the DNSPs to undertake **early engagement** with their customers to develop their regulatory proposals. In 2018 the AER, in conjunction with Energy Consumers Australia (ECA) and Energy Networks Australia, is trialling one such early engagement approach, known as **'New Reg'**. One Victorian DNSP – AusNet Services – has volunteered to trial the New Reg process. The approach is modelled on the WICS negotiated settlement approach, with an independent Customer Forum engaged to negotiate with AusNet Services on specific aspects of its business plan. The AER has been involved throughout the New Reg trial, with a role in shaping the scope of negotiations, approving the engagement plan and negotiation process, and providing support to the Customer Forum (for example, in the form of published guidance notes). A key difference with the WICS approach is that the AER has not committed in advance to accept any of the negotiating positions reached by the parties. However, it has indicated that: *"[i]f early engagement achieves agreement between the business and its customers on key areas, and a regulatory proposal reflects that agreement, the AER would put significant weight on these outcomes in its decision making. The AER may expedite its regulatory assessment by undertaking a less detailed examination of areas upon which agreement was reached."*[338] The extent to which the New Reg process, or a modified version of the process, enables these outcomes will become clearer as the trial progresses. [339]
Approach to assessing efficient and prudent expenditure	Chapters 6 and 6A of the NER set out **expenditure objectives** and **criteria** that the NSPs need to consider when preparing their revenue proposals. Similar objectives and criteria are also applied by the AER to determine whether to accept the NSPs' proposed cost forecasts, or to substitute their own assessment.

[337] https://www.aer.gov.au/communication/independent-review-of-the-aer%E2%80%99s-consumer-challenge-panel

[338] AER (2018), State of the Energy Market 2018.

[339] For further details on the findings from the trial to date, see CEPA (2020), New Reg: AusNet Services Trial – Insights Report 3: Conclusion of the Early Engagement Process.

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	The operating expenditure (opex) and capital expenditure (capex) objectives are the same, differing across the DNSPs and TNSPs only by reference to the services that are covered under the objectives.[340] The expenditure objectives and criteria that the NSPs must apply are set out in the box below. The expenditure objectives are to:[341] (1) meet or manage the expected demand for standard control services/prescribed transmission services over that period; (2) comply with all applicable regulatory obligations or requirements associated with the provision of standard control services/prescribed transmission services; (3) to the extent that there is no applicable regulatory obligation or requirement in relation to: a. the quality, reliability or security of supply of standard control services/ prescribed transmission services; or b. the reliability or security of the distribution/transmission system through the supply of standard control services/prescribed transmission services, to the relevant extent: c. maintain the quality, reliability and security of supply of standard control services/prescribed transmission services; and d. maintain the reliability and security of the distribution/transmission system through the supply of standard control services/prescribed transmission services; and (4) maintain the safety of the distribution/transmission system through the supply of standard control services/prescribed transmission services. The forecast operating and capital expenditure criteria are: (1) the efficient costs of achieving the [operating or capital] expenditure objectives; (2) the costs that a prudent operator would require to achieve the [operating or capital] expenditure objectives; and (3) a realistic expectation of the demand forecast and cost inputs required to achieve the [operating or capital] expenditure objectives. The factors that the AER must have regard to in assessing opex and capex are also almost identical, requiring the regulator to take account of:[342] (1) Its most recent annual benchmarking report (covering both opex and capex) and total factor productivity. The extent of the benchmarking approach differs between TNSPs and DNSPs, with additional econometric benchmarking undertaken for DNSP opex. (2) The NSP's historical performance against its allowances. (3) The substitution possibilities between opex and capex. (4) The extent to which the NSPs have considered non-network opex. For **opex**, the AER typically relies on a **revealed cost base-step-trend assessment** approach, which relies on the assumption that opex is relatively consistent overtime. The AER determines efficient opex in a base year, then applies step changes for opex not reflected in the base year and finally trends this forecast using input costs, productivity, and output growth. The AER can use benchmarking and other bottom-up approaches to assess efficient costs in the base year. In its benchmarking assessment, the AER has used international data from comparators operating in Ontario and New Zealand.

[340] DNSPs' regulated services are termed 'standard control services', while TNSPs' regulated services are 'prescribed transmission services'.

[341] NER v106 6.5.6(a), 6.5.7(a), 6A.6.6(a), and 6A.6.7(a).

[342] NER v106 6.5.6(e), 6.5.7(e), 6A.6.6(e) and 6A.6.7(e).

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	The approach for **capex** is different, reflecting that while an NSP may seek to plan capex in a relatively smooth way, the capex profile is still heavily driven by the need to replace assets and accommodate changes in flows across its network. While revealed capex is a useful input into the AER's assessment of future capex, and the AER can assess this alongside output measures, unit cost, and asset age/ health profiles, revealed capex does not play the same role as revealed opex. In addition to the AER's assessment of efficient expenditure as part of the regulatory determination, network businesses must also conduct a **regulatory investment test** (RIT), which is a cost-benefit analysis to ensure that capex projects above a defined cost threshold are efficient. The analysis must include an evaluation of the investment proposal against viable alternatives, including non-network options. Public consultation is required as part of the assessment. The AER monitors businesses' compliance with the RIT requirements, and also resolves disputes over whether a network business has properly applied a test. The RIT framework has seen several changes since it was introduced. For example, in 2018 the AER completed a review of the RIT for transmission (RIT-T) to ensure it adequately considers emissions reduction goals (see Environmental protection section below), among other issues. The increasing uptake of **distributed energy resources (DER)**, including solar PV and storage, is testing the current approach to the assessment and remuneration of efficient costs. For example, it is expected that DER penetration may increasingly create alternatives to the traditional capex approaches for delivering regulated network services. Subject to the AER's ring-fencing guidelines (see Competition section below), to the extent that NSPs use DER to deliver their regulated services, they would be expected to contract with third-parties or ring-fenced affiliates to do so. As such, it is expected that the provision of network services will increasingly involve opex, rather than capex. Under the NER framework, opex is treated as an expense – customers pay for forecast opex in the year in which it is incurred. As it is assumed that there is no time lag between costs and benefits, opex generates no financial return. Capex is treated differently. It is added to the RAB and then remunerated over the asset's life via the return of capital (depreciation) and the return on capital. In recent years, concerns have emerged that the separate remuneration of capex and opex may contribute to a **'capex bias'**, being a tendency for NSPs to preference capex over opex, even in cases where the latter might be the most efficient option for delivering regulated services. Analysis conducted for the AEMC as part of the 2018 Economic regulatory framework review found that while the current arrangements do not necessarily create a systematic bias in favour of either capex or opex, unbalanced incentives may occur in some cases.[343] Given limited stakeholder support for moving to alternative models, such as a totex approach, the AEMC is continuing to monitor expenditure trends through the annual economic regulatory framework review.[344] A relatively recent development in the AER's revenue setting process is the **binding rate of return guideline**, which was brought into effect through legislative amendments agreed by the COAG Energy Council in 2018.[345] These amendments introduced a binding instrument that establishes a single approach to calculating the allowed rate of return parameters for all network businesses, developed through single, industry-wide process every four years. The policy intent of the changes was to increase certainty and reduce the overall regulatory burden associated with determining the allowed rate of return. In its first application of the binding instrument, the AER sought input from a range of sources, including: reference groups for consumers, investors and retailers; concurrent 'hot tub' evidence sessions from experts nominated by stakeholders;

[343] For example, this is particularly the case when the expected cost of capital is lower than the regulated cost of capital, this increases the financial return of capex investments relative to opex alternatives. See CEPA (2018c).

[344] AEMC (2019), *Integrating Distributed Energy Resources for the Grid of the Future*, September.

[345] COAG (2018), *Bulletin – Binding Rate of Return Guideline*, June.

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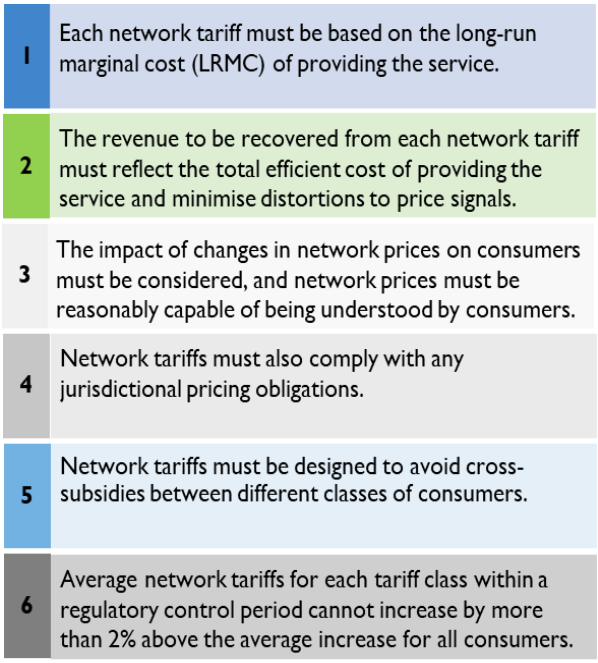
	and an Independent Panel appointed to review the draft rate of return instrument.[346] The AER has recently published its intended approach to developing the 2022 instrument.[347]
Pricing	In relation to pricing, the main recent developments have related to cost-reflective distribution network service charges. We therefore focus on this issue in this section. In the 2012 Power of Choice review, the AEMC released a package of recommended reforms to facilitate the efficient integration of demand side participation in the NEM. While several networks had already introduced cost-reflective charges before this time, the reforms set out four recommendations that established an overarching implementation framework. This anticipated that cost-reflective network charges would be gradually incorporated into retail tariffs. Acknowledging that cost-reflective network pricing would initially impact consumers in different ways, the AEMC recommended that the State Governments develop plans to ease the transition, including a review of energy efficiency programs and rebate / concession schemes. The 2014 Distribution network pricing arrangements rule change implemented the AEMC's recommendation to provide better guidance for setting efficient and flexible network price structures, on the basis of the pricing principles set out in the figure below. *Figure E.1: Distribution pricing principles*  1 Each network tariff must be based on the long-run marginal cost (LRMC) of providing the service. 2 The revenue to be recovered from each network tariff must reflect the total efficient cost of providing the service and minimise distortions to price signals. 3 The impact of changes in network prices on consumers must be considered, and network prices must be reasonably capable of being understood by consumers. 4 Network tariffs must also comply with any jurisdictional pricing obligations. 5 Network tariffs must be designed to avoid cross-subsidies between different classes of consumers. 6 Average network tariffs for each tariff class within a regulatory control period cannot increase by more than 2% above the average increase for all consumers. *Source: AEMC (2014), National Electricity Amendment (Distribution Network Pricing Arrangements) Rule 2014 - Rule Determination.* Under these arrangements, the networks set out the pricing structures that they would apply over the upcoming regulatory period in a tariff structure statement (TSS). The NSPs may – subject to compliance with the pricing principles and other requirements – include different types of tariff structures in each revised TSS. The networks may also trial innovative tariff structures outside the TSS process. To date, the transition to cost-reflective pricing has been slow, and the majority of retail customers are not on cost-reflective tariffs. There are a number of reasons for this, including the lack of wide-spread use of interval metering (i.e. smart meters), policy decisions, interventions by individual governments, network information, and the impact of varying the pricing.

[346] AER (2018), *Rate of Return Instrument – Explanatory Statement*, December.

[347] AER (2020), *Path to the 2022 rate of return instrument – Position paper*, May.

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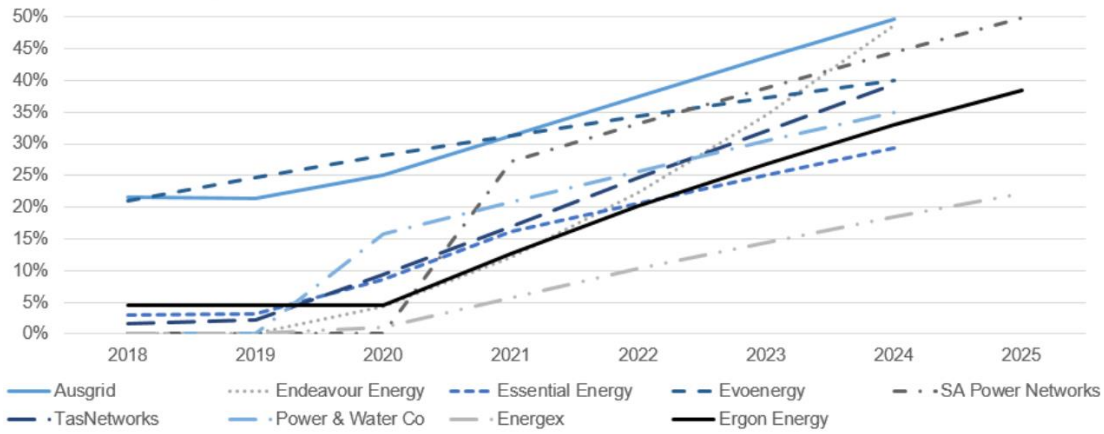
	However, the transition has accelerated and recent DNSPs' TSSs that have been accepted by the AER have advanced cost-reflective tariffs options for retail customers. Analysis by the AER indicates that there will be a significant increase in residential customers whose retailers will face cost-reflective chargers over the next five years, as illustrated in the figure below. *Figure E.2: Percentage of residential customers whose retailers face cost-reflective network tariffs*  *Source: AER (2020), https://www.aer.gov.au/networks-pipelines/network-tariff-reform, accessed 3 March 2020.* In the context of increasing DER uptake, consideration is being given to the appropriate pricing arrangements for distribution network customers who export power to the grid.[348] Currently, distribution use of service charges for exports are prohibited by the NER (clause 6.1.4).
Services and performance	**Reliability standards** for distribution networks are set by state and territory governments, with the objective of efficiently balancing the costs and benefits of a reliable electricity supply. In 2014, following concerns that reliability standards had driven inefficient network investments, the COAG Energy Council endorsed a new approach to setting distribution reliability targets, linked to the value that customers place on reliability.[349] As IPART has been tasked with reviewing distribution reliability standards in NSW[350], we do not discuss these jurisdictional processes further, but rather focus on recent developments in relation to the AER's role. In 2009, the AER established a **service target performance incentive scheme** (STPIS) for distribution networks, with the aim of aligning the networks with the value that customers place on reliability. The STPIS sets targets for the average duration and frequency of outages, and also accounts for customer service and faults, and call centre performance. A guaranteed service level (GSL) component requires DNSPs to compensate customers if performance falls below defined levels. The STPIS also provides a financial reward (or penalty) if networks meet (or fail to meet) their performance targets, set at 5 per cent of allowed revenue. Performance targets are adjusted every five years, linked to recent performance. Accordingly, DNSPs must maintain reliability improvements over time to continue to benefit from the scheme. In 2018, the AER has been tasked with estimating the price customers are prepared to pay for a reliable electricity supply, termed the **value of customer reliability** (VCR). The VCRs calculated by the AER will be used as inputs to the economic regulation of network businesses. For example, the has used its VCR estimates in the application of the distribution STPIS in the latest

[348]For further information, please refer to CEPA (2020), *Distributed Energy Resources Integrating Program – Access and pricing: Reform options*.

[349] COAG (2014), *National Framework for Reliability Standards*, December.

[350] IPART (2020), *Review of distribution reliability standards*, March.

Topic	Details
	round of regulatory determinations.[351] VCRs may also be used by other parties, including to inform jurisdictional reliability standards and targets.[352] The AER published its first VCR estimates in December 2019. As noted above, the AER has been exploring a new approach to customer engagement through the AusNet Services New Reg trial. As part of this trial, AusNet Services and the Customer Forum have negotiated a proposed customer service incentive scheme, which AusNet Services has included in its regulatory proposal to the AER.[353] In response to this development, the AER is consulting on whether to make a new **incentive scheme for customer service**. The scheme would reward (penalise) DNSPs for improvements (deteriorations) in customer service. The draft Customer Service Incentive Scheme (CSIS) published by the AER in December 2019 sets out their intention to adopt a flexible, principles-based approach. This would allow the DNSPs to develop bespoke incentive arrangements, in consultation with their customers.[354] The AER would then assess the scheme against its principles. The objective of the flexible design is to better align DNSPs' incentives with their customers' preferences, in comparison with the more prescriptive approach adopted by the STPIS. In light of the changing nature of the electricity system – specifically, a move towards a more dynamic and decentralised two-way flow system – the Distributed Energy Integration Program (DEIP) is currently considering a range of potential changes to account for services provided by networks to customers who export power to the grid.[355] Specifically, there have been concerns that aspects of the current regulatory and legislative framework may limit and/or slow the integration of distributed energy resources (DER) – such as solar PV and batteries – into the electricity system. The changes being considered relate to the definition of access rights and charging / cost allocation arrangements.
Competition	The approach to establishing which energy services should be regulated has been strongly influenced by the 1993 Hilmer review of competition. This led to division of the industry into networks (presumed to be a monopoly function over the long term), and generation/production and retail (presumed to be contestable functions which may require market supervision, but for which other regulation should be limited and transitory). There have been amendments to this framework over time, with the introduction of contestability for some network activities. For example, the AEMC's Power of Choice review resulted in a rule change that opened metering services to competition from 2017.[356] The AEMC plans to commence a review of the competitive metering arrangements in December 2020. Contestability of energy services is substantially determined by the NER and state-level legislation. The NER provide specific mechanisms that determine if and how energy services are regulated, namely the electricity network service classification undertaken by the AER prior to regulatory determinations. Service contestability decision may also be made outside of these frameworks (for example, the metering rule change noted above). In terms of regulated NSPs, the boundaries of their activities are established under the NER. For DNSP's, the AER's pre-price control service classification process determines which services will be subject to regulation and what form the regulatory control will take. For TNSPs, the NER set out criteria determining which services will be prescribed (subject to revenue determination by the AER), negotiated or non-regulated.

[351] AER (2020), *Final Decision – SA Power Networks Distribution Determination 2020 to 2025*, June.

[352] AER (2019), *Values of customer reliability*, December.

[353] AER (2019), *Explanatory statement – Draft Customer Service Incentive Scheme*, December.

[354] AER (2019), *Explanatory statement – Draft Customer Service Incentive Scheme*, December.

[355] ARENA (2020), *DEIP Access and Pricing Workshop 3*.

[356] AEMC (2015), *Expanding competition in metering and related services – Final Determination*, November.

Topic	Details
	Both transmission and distribution network providers are also subject to ring-fencing provisions, stating conditions under which they may provide contestable services. The ring-fencing rules aim to ensure network businesses do not use revenue from regulated services to cross-subsidise their unregulated products. They also deter discrimination in favour of affiliate businesses, and prohibit a regulated business from engaging in a potentially contestable activity. **Competitive procurement of transmission infrastructure (Victoria)** The AEMO is responsible for planning the Victorian transmission network. Where AEMO assesses that a network or non-network development is needed, augmentation projects may be competitively tendered. This is referred to as a "contestable augmentation".[357] The Victorian arrangements allow multiple parties to build, own and operate elements of the transmission system.[358] AEMO's revenues are adjusted to pay for the new asset. The new service may be charged to AEMO under a 30-year contract or if the augmentation is provided by an entity that is subject to AER regulation (for example SP AusNet) than the asset may be rolled into their RAB.
Other incentive mechanisms	The building blocks regulatory regime created by the NEL and NER places several financial incentives on the NSPs, which have evolved over time. Currently the expenditure related incentives on the NSPs include: • The Efficiency Benefit Sharing Scheme (EBSS). Introduced for use in determinations from 2008 and a new version (with minor updates) was introduced alongside the CESS in 2013. • The Capital Expenditure Sharing Scheme (CESS). Introduced for use in determinations from 2013. • The Demand Management Incentive Scheme (DMIS). Introduced for use in determinations from April 2018 (including for existing determinations). As noted in the Customer section above, the AER is currently consulting on a customer service incentive. The overall package of financial incentive mechanisms is intended to work together to ensure that the NSPs choose the most efficient solutions to provide ongoing services to their customers **EBSS** The EBSS only applies to opex. The EBSS was introduced to solve two incentive issues in the regulatory framework, which are particularly prominent when using a base-step-trend approach, as adopted by the AER: • NSPs had an incentive to increase costs in the base year, to increase allowances for the subsequent regulatory period. • NSPs' incentives to make ongoing efficiency savings decreased as the regulatory period progressed, towards the next period's base year. This is because the NSP would only retain savings made up to the base year. The EBSS allows the NSP to keep any recurring (permanent) savings for a period of six years regardless of when the saving is made. The incentive is symmetric, in that if the NSP has a recurring overspend it bears the costs for six years. For temporary underspends or overspends, the NSP only receives/ bears the time value of money. The headline sharing factor for the NSP is approximately 30%. That is, the NSP retains (bears) 30% of under- (over-)spends while consumers receive (bear) 70% of under- (over-)spends.[359] **CBSS** The CESS only applies to capex. It was introduced in 2013 to work alongside the EBSS, primarily to equalise the incentive to make capex savings over the regulatory period, but also to

[357] NER 8.11.6

[358] AER (2013), *Victorian transmission determination for the Australian Energy Market Operator*.

[359] The AER relies on a savings-in-perpetuity calculation to determine its estimate of the sharing factor. The AER's opex sharing factor is based on companies keeping the efficiency savings for six years with a real discount rate of 6%.

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	avoid inefficient substitution between opex and capex. Like opex, the NSPs' incentive to underspend (or avoid overspends) on capex diminishes as the regulatory control period progresses. This is because the RAB is adjusted for actual capex when rolled forward at the start of the next regulatory control period. Therefore, any benefit – the difference between forecast and actual depreciation and the difference between forecast and actual return on RAB – from underspending capex at the start of the period is retained for five years, while the benefit of an underspend later in the period is retained for a shorter time. The AER set, ex ante, both the incentive strength and sharing factor for the CESS at 30%. The 30% factor is applied to any under-/over-spend across the entire regulatory period, with a discount factor applied to convert the differences between actual and forecast capex into a net present value (NPV). The sharing factor is applied pre-tax, meaning that the NSPs will pay tax on any retained underspend which reduces their overall benefits. The NSPs also pay tax on opex savings retained. Alongside the *ex ante* sharing factor, the AER (in most circumstances) rolls forward the RAB using actual capex and forecast depreciation. The AER stated that the use of actual depreciation would lead to higher powered incentives than the intended 30%. The CESS creates a stronger incentive for NSPs to defer capex, particularly at the end of the period, and re-propose it for their next regulatory period. These deferrals may be efficient and therefore benefit consumers where they do not impact on the NSPs' forecast capex plans for future regulatory periods. However, deferrals may result in consumers paying the CESS reward and funding the capex in the following period. The CESS allows for adjustments to the CESS payments where *"a material amount of capex is deferred between regulatory control periods."* In addition, unlike opex, the AER can scrutinise an NSP's capex on an ex post basis – albeit under certain conditions only. Where it deems that some capex may have been inefficient or imprudent, it can remove this capex from the RAB and reverse any penalty/ reward provided by the CESS. **Demand management incentive framework** In August 2015, the AEMC published its final rule determination setting out revised arrangements to incentivise DNSPs to adopt demand management solutions instead of network projects, where this would be more efficient. The rule change was in response to stakeholder concerns that under the prevailing regulatory framework, DNSPs were biased towards network investment over alternative options. The rule change established two parts to the demand management incentive framework: • The demand management incentive scheme (DMIS), which provides DNSPs with the opportunity to earn financial rewards for implementing efficient non-network projects that deliver net cost savings to consumers. • The demand management innovation allowance mechanism (DMIAM) which makes funding available to DNSPs for research and development of non-network solutions with the potential to reduce long term network costs. In December 2017, the AER published its final design for the DMIS and DMIAM (discussed under the Innovation section below). For each DNSP, the DMIS will be implemented according to the steps outlined below: (1) Through its distribution determination, the AER will set out how (if at all) the scheme will apply to the DNSP during its regulatory control period. (2) DNSP identifies eligible projects, which must: be the preferred option to meet an identified need on the distribution network; must have a positive NPV when assessed against the status quo (unless for reliability corrective action); and have been assessed as the preferred option through either the Regulatory Investment Test for Distribution (RIT-D) or the minimum project evaluation requirements . A project becomes committed when the DNSP enters into a contract to procure the required DM from a third party, or internal approval is granted for self-provision of the DM project. (3) DNSP calculates the project incentive for committed projects. The project incentive is capped at the lower of: (a) the expected present value of the project's DM costs (net of

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	subsidies) multiplied by the cost multiplier or (b) the expected present value of the project's net benefit (calculated through a cost-benefit analysis). The cost multiplier under the current DMIS is 50 per cent. While the AER may vary this, the multiplier prevailing at the time an eligible project becomes a committed project will continue to apply for that project. (4) DNSP prepares and submits an annual DM compliance report to the AER, setting out the details of both committed and eligible projects. (5) Based on the compliance report, the AER determines the total financial incentive available to the DNSP for each year of its regulatory control period. This includes adjustments for projects previously committed, but not fully implemented. The total financial incentive that a DNSP may accrue across all committed projects is capped at 1 per cent of their allowed annual revenue for that year. (6) The total financial incentive for year t-2 will then be included in the DNSP's total revenue allowance for year t. The DMIS can operate as both a pre- and post-allowance determination incentive.
Protecting the environment	Environmental protection arrangements do not fall within the remit of the AER and/or AEMC. However, there are ways in which both entities may take environmental protection issues into account in their decision making. For example, the AEMC has observed that its decisions on changes to the NER are made with reference to the NEO. The NEO requires the AEMC to consider the long-term interests of consumers in relation to specific matters (price, quality, safety, reliability and security of supply), which do not include climate change or the environment. However, to be consistent with the NEO, the AEMC considers that it must take into account whether its decisions are robust to the impacts of mitigation or adaptation risk associated with climate change (for example, if these factors impact the matters specified in the NEO).[360] In performing its role, the AER takes into account the environmental protection policies and requirements that impact the regulated network service providers. As noted above, NSPs are required to undertake cost benefit analysis (RIT) for large individual projects. In its 2018 review of the RIT-T, the AER assessed whether emissions reduction goals where adequately considered. For example, the revised RIT-T application guidelines set out guidance on the appropriate treatment of cost savings in meeting a renewable energy target.[361]
Vulnerable customers	Key energy-specific consumer protection arrangements are primarily set out under the National Energy Customer Framework (NECF), a suite of legal instruments that regulate the sale and supply of electricity and gas to retail customers. Key aspects of regulatory responsibility relating to the NECF are set out below: • While the AEMC is the rule-making body for the NEM (including the NECF), the rules are implemented and enforced by the Australian Energy Regulator (AER). In relation to the NECF, the AER's responsibilities include approval of retailer hardship policies, for example assessing whether there are appropriate processes in place to identify hardship customers. • While a national framework, NEM jurisdictions may choose to apply the NECF work differently; for example, by exempting different groups of customers from late payment fees. Victoria has its own Retail Code instead of the NECF (as set out in the ESC case study). • Retail market monitoring is undertaken by the AEMC, AER and jurisdictional economic regulators.

[360] AEMC (2019), *Annual Report 2018-2019*, page 32.

[361] AER (2018), *Application guidelines – Regulatory investment test for transmission*, December.

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	• NEM jurisdictions apply different concession and ombudsman schemes, in line with their particular legislative framework. Many of the customer protections set out under the NECF, including for vulnerable customers, relate primarily to the retailer-customer relationship. For example, this includes provisions related to disconnections and hardship arrangements. There are some customer protection provisions that relate specifically to the regulated DNSPs, including: a small compensation claims regime; Guaranteed Service Level (GSL) schemes related to applicable service standards; jurisdictional ombudsman schemes; complaint and dispute resolution schemes; requirements for connection services contracts; and requirements related to disconnections and supply interruptions.[362] In relation to vulnerable customers specifically, the main provisions relate to maintaining supply for customers requiring life support equipment.[363]
Maintaining economic and financial sustainability	Under the NER, the AER is required to set the allowed rate of return to achieve the NEO, and the rate of return objective. The NER specify that: *"The allowed rate of return objective is that the rate of return for a …[NSP]… is to be commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the …[NSP]… in respect of the provision of standard control services (the allowed rate of return objective)."* Combining this with the NEO, the AER consider that *"the allowed rate of return should reflect the minimum returns required (given the risk involved in the investment) to attract the level of investment needed for the efficient ongoing provision of energy network services at the service level demanded by end users."*[364] During consultation on the AER's 2018 Rate of Return Guideline, some submissions suggested that financeability should be used as a cross check for assessing whether the allowed rate of return was consistent with the objectives specified in the NER. However, in its final decision, the AER decided not to use a financeability assessment to inform the rate of return. The AER considered that there is a lack of clear guidance on how a financeability assessment should be applied as a cross check to the parameters underpinning the allowed rate of return. Consequently, the AER continue to consider that the approach that best meets the objectives is to base each cost of capital parameter on the available evidence.[365] This position took into account stakeholder submissions which indicated that some of the NSPs could face challenges maintaining financial metrics consistent with an investment grade credit rating under the rate of return instrument. However, the AER considered that this outcome was unlikely, as they *"expect any regulated firms under financial metric pressure from the new rate of return instrument to take countermeasures to protect their credit profiles. Countermeasures could include reducing the proportion of capital expenditures funded by debt, reducing capital or operating expenditures and reducing dividends."*[366] The AER has also noted that while regulators in other jurisdictions – such as Ofgem in Great Britain – have specific obligations for regulated service providers to maintain an investment grade credit rating, no such obligation exists in Australia.[367]

[362] AEMC, Service standards and quality and AEMC, Contract terms.

[363] AEMC, *Additional protections under the NECF*.

[364] AER, *Does the rate of return achieve the national gas and electricity objective?*, AER presentation.

[365] AER (2018), *Rate of return instrument – Explanatory Statement*.

[366] Ibid, page 393

[367] AER (2018), *Discussion paper – Financial performance measures*, February. page 28

Topic	Details
How does the regulator measure success?	Each year, the COAG Energy Council publishes a Statement of Expectations, which the AER responds to through a Statement of Intent, setting out its work program and benchmarks for performance measurement.[368] Underneath this, a work program sets out performance indicators that are used to measure success.[369] Specific aspects of the regulatory framework may be reviewed by the AER or AEMC through other processes. Generally, the overall assessment is undertaken with reference to the NEO. For example, the AEMC's annual review of the economic regulation of electricity networks was established to provide advice on whether the regulatory framework is sufficiently flexible and robust to continue to achieve the NEO. This requirement was introduced in the context of increasing uptake of DER.[370] The AEMC is required to report to COAG Energy Council annually. As part of its annual review, the AEMC tracks a number of key performance indicators, for example in relation to network expenditure trends and the installation of smart meters.[371]
Any other relevant points	As noted above, the AER has established a **demand management innovation allowance mechanism** (DMIAM), which makes funding available to DNSPs for research and development of non-network solutions which have the potential to reduce long term network costs (the 'allowance objective'). There are three elements of the DMIAM:[372] • The allowance, which includes a fixed sum ($200,000, in 2016-17 prices, escalated annual at CPI) that is common across all DNSPs) and an additional 0.075% of each DNSP's annual revenue requirement. DNSPs are able to recover this amount throughout the regulatory period. • Project eligibility requirements, which relate to the allowance objective, requiring the project to be both innovative and have the potential to reduce long term network costs. 'Innovative' is defined as: based on new or original concepts; or involves technology or a technique not previously implemented in the relevant market; or is focussed on customers in a market segment that has not been exposed to the technology. • Compliance reporting requirements, which require each DNSP to submit an annual report to the AER that sets out the amount of allowance claimed, along with specifics of each project funded by the allowance. In its 2019 economic regulatory frameworks review, the AEMC recommended the introduction of a **regulatory sandbox** toolkit.[373] The objective of the toolkit is to make it easier for businesses (including, but not limited to the regulated NSPs) to develop and trial innovative energy technologies and business models. The AEMC's recommended toolkit includes: • An **innovation enquiry service** that would provide guidance and feedback from the AER to help facilitate trials that are feasible under current laws and rules • A new **regulatory waiver power** for the AER, that can provide temporary exemption for trials from regulatory obligations arising out of the existing rules or from the registration requirements in the laws. • A new AEMC **trial rule change process**, that can temporarily change existing rules or temporarily introduce a new rule of limited application to allow a trial to go ahead.

[368] AER (2017), *Statement of Intent 2017-18*.

[369] AER (2017), *Work program 2017-18*.

[370] COAG (2016), *Terms of Reference*.

[371] AEMC (2019), *Integrating Distributed Energy Resources for the Grid of the Future*.

[372] AER (2017), *Explanatory Statement – Demand management innovation allowance mechanism*.

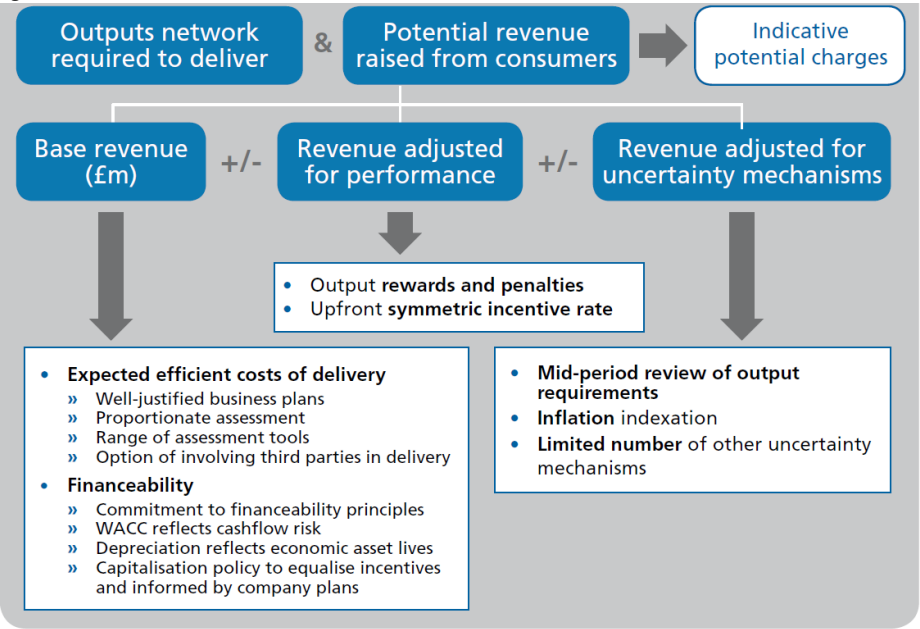
[373] AEMC (2020), *Final Report – Regulatory Sandboxes – Advice to COAG Energy Council on Rule Drafting*.

Appendix F OFGEM/ ENERGY NETWORKS

Topic	Details
Overview	Ofgem regulates the energy sector in Great Britain. Ofgem sets price controls for gas and electricity transmission and distribution operators. We focus on network price controls only. The regulatory framework initially adjusted allowed revenues by the Retail Prices Index less a high-level efficiency savings estimate (RPIX) and was focused on lowering the cost of energy network services. Over time the regulatory framework has taken on additional aims, and new mechanisms were introduced to address perceived issues with the previous framework; for example, incentives related to service quality were introduced to balance the imperative under RPI-X controls for network companies to minimise cost at the expense of longer-term service quality. Ofgem reviewed the regulatory framework in its RPI-X@20 Review. The resulting Revenue = Incentives + Innovation + Outputs (RIIO) framework was introduced in 2010. RIIO established a conceptual framework to regulation that could be applied consistently across the four energy network sectors. After one round of RIIO price controls, Ofgem made a number of significant changes to the initial RIIO framework. This included changing the main incentive mechanism, reducing the length of the price control (from eight years back to five years), giving a greater focus to the environment, and providing tools for greater consumer engagement. Ofgem's objectives are to make decisions that are in the long-term interests of consumers, including ensuring that regulated companies deliver value for money services that both existing and future consumers want. Ofgem set out that the RIIO-2 price controls should: • "*Give due attention to mitigating the impact of networks on the environment* • *Are designed so that networks play a full role in addressing consumer vulnerability issues.*"[374]
Regime type	All sectors are regulated under a total revenue cap approach. However, actual returns vary based on the companies' expenditure relative to Ofgem's base line and the outputs delivered. This is illustrated in the figure below (the mid-period review has been removed from RIIO-2).

[374] Ofgem (2018a), *RIIO-2 Framework Decision*, July, page 4.

Figure F.1: RIIO



Ofgem (2010)

For RIIO-2, Ofgem switched back to a five-year price control period from an eight year one used in RIIO-1. It considered the uncertainty surrounding network activity in the future made it difficult to predict allowances over an eight-year period.[375] The eight year price control period had been introduced to signal to companies that Ofgem had moved away from 'short-termism' and encourage companies to think more long term.[376]

For electricity distribution, up until April 2010 companies were regulated under a revenue driver approach. Under this approach revenue would vary based on the number of units distributed and the number of customers (at 50:50 weight), but prices were only allowed to increase in line with inflation (RPI). This revenue driver also took account of actual customer numbers and different voltage categories.[377]

In the price controls from April 2010, Ofgem chose to remove these volume drivers and set total revenue (subject to incentives) for the entire period without a volume driver for economic growth. A key reason cited by Ofgem was that the measures were unlikely to adequately capture the relationship between economic growth and costs, and the unit distributed driver may discourage companies from adopting alternative solutions, such as demand management, as this would reduce the units distributed.[378] Volume drivers for uncertain costs, such as connections, are still used.

For electricity transmission, companies were regulated under a total revenue cap from the start. This approach was adopted to remove any perverse incentives for companies to increase the volume of electricity. However, during the third price control (TPCR3) the Scottish transmission operators had an annual correction to their allowed revenues based on the units of electricity transmitted. Ofgem now sets a base level revenue allowance, but provides a number of uncertainty mechanisms, for example, connections and large augmentation projects.[379]

Gas transmission had similar arrangements – revenue drivers initially, but a base level revenue cap was eventually applied with revenue drivers for augmentation (capacity) projects.

Gas distribution was separated from transmission in 2002 but was applied in aggregate to all eight operators before each operator received and independent price control in 2008. The revenue volume driver was removed in 2008 on the basis that gas throughput was not increasing steadily. Volume drivers are still used, for example, replacement work associated with replacing iron mains is subject to a volume driver.

Since the introduction of the RIIO regime, Ofgem has operated a totex based approach. This was adopted to equalise the incentives between capex and opex. Expenditure is initially treated the same, and then a capitalisation percentage is applied to it with a proportion refunded immediately and a proportion added to the RAB.

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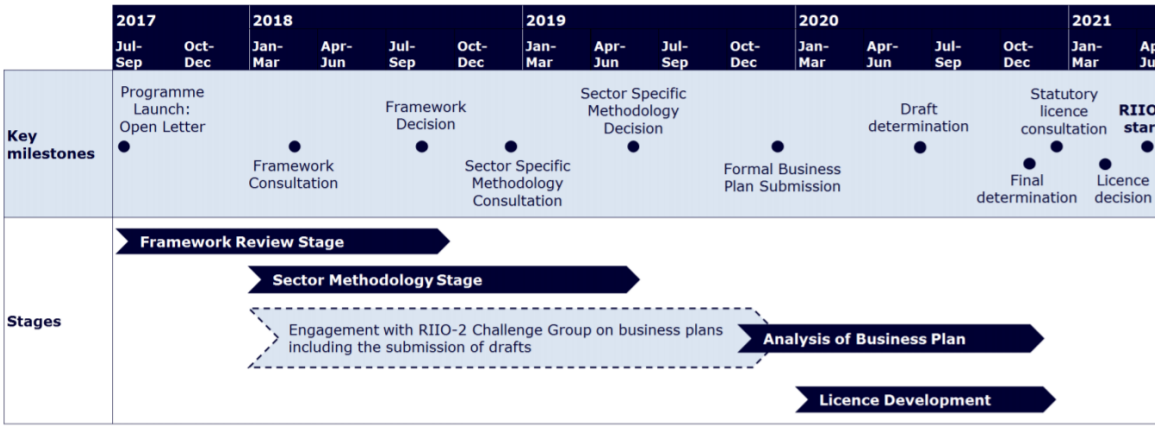
Industry structure	All the companies are privately owned. While there are a number of distribution operators (licencees) there are owners that hold multiple licences: • three electricity transmission network operators; • one gas transmission operator; • 14 electricity distribution operators (although only seven owners); and • eight gas distribution operators (although only four owners).
Price control process	The RIIO-2 price control is a multi-stage process. The current transmission and gas distribution control process is illustrated in the figure below. Stages include: • framework development (consultation and decision); • sector specific methodology (consultation and decision); • business plan submissions; • draft determinations; • business plan resubmissions (if required); and • final determination. The whole process is expected to take three years and five months. The actual price determination is expected to take one year from Ofgem's receipt of the final business plans. *Figure F.2: RIIO-2 process*  *Ofgem (2018a)* The RIIO-1 price control process for transmission and gas distribution included a 'fast track' option and this was removed for RIIO-2. In RIIO-1 where Ofgem decided that a best performing company's plan demonstrated good value for customers it could agree price control terms with the company up to one year earlier than the other companies.[380] The fast tracking process provided both an immediate financial reward (2.5% of totex) and reputational benefits. Ofgem fast tracked two electricity transmission companies and one electricity distribution company. The reasons Ofgem gave for removing the fast-tracking option were:

[375] Ofgem (2018a), page 17.

[376] Ofgem (2010a), *RIIO: A new way to regulate energy networks – Final decision*, October, page 27.

[377] Ofgem (2007), *Regulating Energy Networks for the Future: RPI-X@20 History of Energy Network Regulation*, February, page 42.

[378] Ofgem (2008), December, page 83.

[379] Ofgem (2007), pages 50-51, 57.

[380] Ofgem (2010a), page 32.

Topic	Details
	• There were highly concentrated ownership structures. Ofgem considered that this concentration undermined the benefits of fast tracking which relied on companies competing against each other. • For transmission, where there were significant differences across companies, the information revealed by one company was less appliable to other companies and therefore harder to use to set challenging targets for the other companies. • Incompatibility with enhanced engagement. Ofgem considered that the enhanced consumer engagement that was part of RIIO-2 (discussed below) did not leave sufficient time for fast-tracking.[381] Ofgem has decided to leave fast-tracking as an option for electricity distribution. For RIIO-2, Ofgem introduced the Business Plan Incentive (BPI). The BPI is designed to encourage high-quality and ambitious business plan. The BPI has four stages: 1. Stage 1: A qualitative assessment of the business plans is conducted by Ofgem to ensure the plan contains a minimum level of the required information. If Ofgem considers that the plan fails to meet minimum requirements then it will apply an upfront penalty of 0.5% of allowed baseline totex. 2. Stage 2. A qualitative assessment of the business plans as to what additional value the business plan offers consumers. Companies may bid for a reward based on the quality of its plan in delivering customer value. This is referred to as the 'Consumer Value Proposition' (CVP). The reward the company receive would reflect the additional value for consumers that the CVP generates. 3. Stage 3. If lower confidence costs (i.e. those that cannot be assessed independently/ with benchmarking) are deemed to be poorly justified then Ofgem can set a penalty of 10% of the value of those poorly justified costs removed from Ofgem's baseline. 4. Stage 4. High confidence costs that are below Ofgem's baseline view will receive an upfront reward.[382] Ofgem is also changing electricity transmission and distribution licences to clarify licensees' responsibilities in delivering whole system outcomes. This requires companies to engage with other licensees (and where appropriate relevant stakeholders) to consider the impacts of their actions on other parts of the network. This includes coordinating in order to identify and implement whole system solutions and to collect and share relevant information and data where this can support whole system outcomes.[383] Ofgem noted that for RIIO-2 it wanted to keep the price control as simple as possible. This meant that it decided to not proceed with the following: • suspending work on the cashflow floor – which was to protect against downside financeability concerns; • not introducing competed-for incentive on Business Plans; • not applying multiple initiatives to drive 'whole system' outcomes; • not proceeding with the application of a Class 2 approach to RoRE – these were mechanisms that restricted/ linked companies' returns to the sectors' as a whole; and • only applying relative output incentives and dynamic targets in circumstances where these are likely to bring added value.[384]

[381] Ofgem (2018a), page 45.

[382] Ofgem (2019a), *RIIO-2 Sector Specific Methodology – Core document*, May, pages 109-110.

[383] Ofgem (2019a), chapter 8.

[384] Ofgem (2019a), page 143.

Topic	Details
Role of customers and stakeholders	Ofgem's price controls have shown extensive evolution in how customers are engaged and inform the price controls. In DPCR5, Ofgem commissioned its own customer research on customers' expectations of their distribution networks and their willingness-to-pay for improvements in service.[385] This information informed its position on guaranteed service levels and payments, and also assisted Ofgem's introduction of the Broad Measure of Customer Satisfaction (BMCS). The BMCS is an incentive arrangement to drive networks to deliver good customer service. It includes questions around customer interactions with the networks. The incentive is provided as a competition with networks that achieve above average scores receiving a reward. Ofgem conducted customer surveys to assess the network operators' performance.[386] Ofgem saw the introduction of RIIO as a way of ensuring consumers' interests were at the heart of its price controls. Ofgem wanted networks to be proactive in how they engaged with customers. For RIIO-2, Ofgem required transmission companies establish a **User Group**, while the gas distribution companies establish **Customer Engagement Groups (CEGs)**. Ofgem describes these groups as: "*… independently chaired. They will provide us with a public report on their views on the companies' business plans from the perspective of local stakeholders (in distribution) and network users (in transmission). Companies will provide secretariat support for these groups, and provide any technical support that they may require.*"[387] For example, the SGN CEG is chaired by Maxine Frerk an experienced regulatory and consumer expert (former head of networks at Ofgem). The CEG reviews the company's plans, consumer engagement, and proposals. They provide a final report that is submitted with the companies' business plans to Ofgem.[388] The companies are expected to undertake the own customer engagement to inform their plans and use the CEG to keep them on the right track. Ofgem expects the Groups to focus on challenging the companies on: • their overall priorities and approach; • proposed outputs and associated totex (this includes reviewing the level and appropriateness of the evidence provided by the companies to support this, such as comparisons to historical performance, comparisons with other companies); • the quality of their stakeholder engagement; • their approach to protect and support vulnerable consumers; • their approach to innovation including how it is incorporated into business as usual; • the scenarios that the companies considered; • the alternative options the companies' considered; and • issues relevant to the particular region.[389] Ofgem also formed a RIIO-2 **Challenge Group** of independent experts to review the companies' business plans and provide their views, and challenges to the business plans, to Ofgem.[390] The Challenge Group is also charged with challenging Ofgem on its policy thinking. As discussed below, Ofgem introduced an explicit incentive to cover stakeholder engagement during the price control period.

[385] Accent (2007), *Expectations of DNOs & Willingness to Pay for Improvements in Service – Stage One: Qualitative Report*, December.

[386] Ofgem (2010b), *Customer Satisfaction: Broad Measure*, August.

[387] Ofgem (2018a), page 15.

[388] See for example, SGN (2019), , December.

[389] Ofgem (2019b), *RIIO-2 Enhanced Stakeholder Engagement Guidance – Version 2*, November, pages 14-15

[390] See for example, *RIIO-2 Challenge Group (2020a), RIIO-2 Challenge Group Independent Report for Ofgem on RIIO-2 Business Plans*, January.

Topic	Details
	Business are expected to undertake customer engagement to justify the outputs they propose to deliver. Ofgem, and the Challenge Group, expect businesses to clearly demonstrate (and show the links) between the engagement and how their proposals. Ofgem set out a proposed for its own enhanced engagement with a broad range of stakeholders. The RIIO-2 framework introduces requirements and opportunities for stakeholder engagement: • Ofgem stated it will hold open public hearings to focus on areas of disagreement or contention. Stakeholders will be invited to provide evidence in support of or against companies' business plans.[391] • Ofgem also expects the company business plans to set out how the companies will maintain a process of high quality engagement with stakeholders on an ongoing basis.[392] Ofgem also engaged with stakeholders throughout the development of its sector specific methodologies. This was done via workshops and consultation documents.[393]
Pricing	Focusing on distribution charging; the way electricity distributors in GB charge is governed by the Distribution Connection and Use of System Agreement (DCUSA). This is a multi-party contract between the distributors, suppliers and generators. Ofgem makes the final decision when any changes are likely to have an impact on competition, discriminate between parties, relates to the safety or security of a network, it has concerns with the process, or it has raised the change.[394] The DCUSA manage the Common Distribution Charging Methodology (CDCM). The core principles for the CDCM are that it: • must allow networks to comply with their licence conditions; • must facilitate competition; • must be cost reflective; • must remain up to date; and • forward looking.[395] Ofgem considers that it should send price signals to customer about the costs their connections could impose on the network in the future. Therefore, while the companies are regulated under a revenue cap, Ofgem has authority over the pricing rules. Material changes to pricing rules that Ofgem make are required to be supported by impact analysis including distributional analysis. For example, Ofgem recently made changes to how 'residual' charges (those not recovered through forward-looking charges) were recovered, and this process required an impact assessment to be undertaken. The changes were to reallocate residual charges because the changing electricity system was leading to customers that were able to reduce their usage paying less of the residual charge. Ofgem commissioned both short-term and long-term distributional analysis.[396]

[391] Ofgem (2018a), page 16, and Ofgem (2019b).

[392] Ofgem (2019a), page 15.

[393] Ofgem (2019b).

[394] DCUSA (2019), *DCUSA Change Process Overview*, August.

[395] WPD (2017), July, page 5.

[396] Ofgem (2019d), *Targeted charging review: decision and impact assessment*, November.

Topic	Details
Approach to assessing efficient and prudent expenditure	Alongside the totex approach Ofgem uses a mix of bottom-up (i.e. activity level, opex level, capex level, etc) and top-down (i.e. totex) expenditure assessment. For gas and electricity distribution, Ofgem relies heavily on benchmarking the companies against each other. It uses a mix of regression models, unit cost models, and engineering assessment of costs and volumes. Ofgem also uses benchmarking in transmission, however as there are fewer companies, its use is much more limited. It focuses on benchmarking where activities can be consistent, for example for business support costs Ofgem used a mix of transmission companies' expenditure levels and those from other non-network large businesses. The information on non-regulated business was provided by an accounting firm.[397] This relied on confidential data, and as such the analysis in full was not published. In RIIO-1, Ofgem used a menu regulation approach, referred to as the Information Quality Incentive (IQI) to encourage companies to put forward their best plans from the start. The incentive was based around 'incentive compatibility' which meant that companies would achieve a lower percentage return on equity if they put in a high expenditure forecast in order to beat it during the price control. The best possible return on equity the companies could earn was if they put forward their best expenditure proposals from the start. However, this incentive was targeted at investor returns, and management may have had different incentives (e.g. putting in more cautious forecasts to beat them). The IQI relied on a 75:25 weight of Ofgem's view of efficient costs to the company's efficient costs (i.e. Ofgem's baseline put a 25% weight on the companies' view of their expenditure). For RIIO-2, Ofgem has introduced a totex incentive mechanism (TIM) and business plan incentive (BPI) to replace the IQI for transmission and gas distribution. Ofgem noted that this was because: • Its view of costs should be independent of the companies' views. • It considered that the IQI was complex and misunderstood incentive mechanism.[398] Ofgem already used a TIM during RIIO-1 as this was part of the IQI. However, the TIM for RIIO-2 is to be a confidence dependent rate. An incentive sharing rate of 50% (i.e. the company retains/ bears the cost of 50% of underspends/ overspends) would be applied to higher confidence baseline costs, where "*High-confidence baseline costs are those costs where Ofgem has a high level of confidence in its ability to independently set a cost allowance.*"[399] Other costs would receive an incentive rate of 15%. The stages of the BPI are discussed above, however Stage 3 and 4 provide incentives for the companies to reveal their efficient costs: • Stage 3. If lower confidence costs, i.e. costs that cannot be assessed independently, are deemed to be poorly justified then Ofgem can set a penalty of 10% of the value of those poorly justified costs removed from Ofgem's baseline. • Stage 4. High confidence costs that are below Ofgem's baseline view will receive an upfront reward. This difference would be multiplied by the TIM sharing factor, and applied upfront (i.e. with a time value money benefit).[400] There does not appear to be any specific analysis to support the size of the incentives under the BPI. The TIM, expenditure sharing factor, can range between 15% and 50%. The lower bound is based on the 100% of the costs that Ofgem has 'low confidence' in its ability to assess the cost.

[397] Ofgem (2012), *RIIO-T1: Final Proposals for National Grid Electricity Transmission and National Grid Gas – Cost assessment and uncertainty*, page 120.

[398] Ofgem (2019a), page 107.

[399] Ofgem (2019a), page 108.

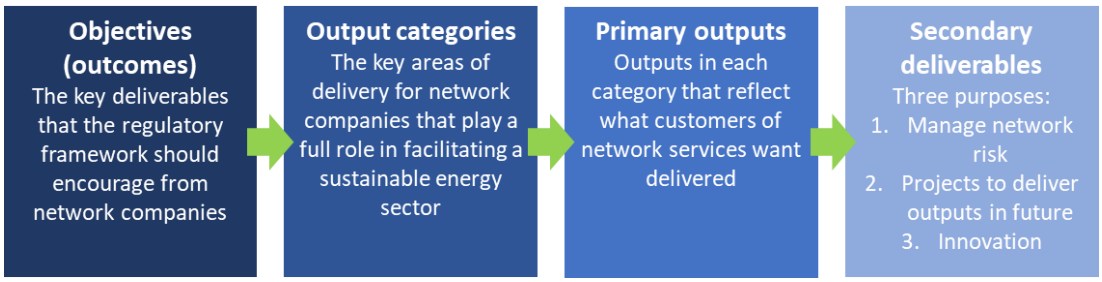
[400] Ofgem (2019a), pages 109-110.

Topic	Details
	The upper bound is based on Ofgem considering that it has high confidence in 100% of the costs. Ofgem has largely relied on regulatory precedent for the upper bound 50%. The 15% lower end, is based on Ofgem's analysis that a company would need a 10-15% incentive rate and perceive its 'true' cost of equity to be significantly lower than the allowed cost of equity for it not to prefer to underspend.[401] In addition to having a sharing factor for baseline expenditure, Ofgem also uses a number of uncertainty mechanism. These include: • Volume drivers – revenue is provided via a fixed unit cost multiplied by outturn volumes. • Reopeners – typically associated with a large project or very uncertain costs, with the price control being reopened (with some form of trigger) for these specific expenditure items. • Pass-through mechanisms – this includes indexation of costs, or costs outside of the companies control.
Services and performance	Largely the transportation of electricity or gas are the only services regulated by Ofgem. Ofgem notes that the RIIO framework intends to capture and incentivise the efficient delivery of all of the activities that energy network companies undertake. RIIO-2, distinguishes between services and services levels delivered via licence obligations, specific deliverables with funding (price control deliverables) and service improvements that Ofgem seek to incentivise (output delivery incentives): • **Licence obligations**. These set minimum standards imposed as a condition of the licence. Failure to meet these standards could lead to enforcement action and penalties. • **Price control deliverables**. These will capture what are directly associated with baseline funding. These could include: o Outputs or input activities to be delivered to a stated standard, for example in response to government policy or Ofgem direction. o Output or input activities that are significant and/or high value (e.g. a list of large capital projects to a stated specification, budget and timing). • **Output delivery incentives.** These apply where service quality improvements beyond the minimum standard may be in the interests of consumers. These outputs will have incentive mechanisms applied to reward or penalise performance. The overall cost of such financial incentives cannot exceed the value of service improvements to consumers. Ofgem proposed that it would set stretching targets for individual companies. Ofgem will seek to set targets based on the information that is available in time for final determination, and ideally put in place mechanisms (at the sector level) that allow targets to be automatically recalibrated to stretch levels based on achieved performance during the price controls. The latter are typically covered under Ofgem's Network Output Incentives (NOMs): *NOMs are mechanisms that provide a means to monitor and assess the network management outcomes that network companies deliver. They represent the service delivery resulting from companies' asset interventions, and can be considered as a forward-looking indicator of network performance. In RIIO-1, these cover specified asset replacement/refurbishment activities; for some sectors, they also cover network capacity related activities.*[402]

[401] Ofgem (2019a), pages 115-116.

[402] Ofgem (2018c), *Network Output Measures (NOMs) Incentive Methodology*, page 3.

Figure F.3: RIIO-ED1 – Outcomes framework



Source: Ofgem (2010b)[403].

A mix of data is used to set service level targets. Ofgem expects companies to undertake cost benefit analysis and demonstrate that they have engaged with stakeholders on the outcome.

For example, interruptions) for electricity distribution customers is based on willingness-to-pay information. The networks are provided expenditure to maintain service levels, but they can improve service levels and receive the difference between the willingness-to-pay estimate and their expenditure. On the other side, they face a penalty if they let service slip.

Other services, such as improvements in communications were based on customer surveys.[404]

Ofgem have used a range of incentive mechanisms related to service performance/ outcomes over the years, with varying levels of success.

Long term incentive mechanisms include the interruptions incentive mechanism. It is symmetric, but networks only receive rewards if they can deliver improvements at a lower cost than the willingness-to-pay estimate. Ofgem also sets guaranteed service level (GSL) payments that networks need to pay when performance falls below certain standards. There are also customer service standards around such things as time to answer phone calls and time to deal with complaints.[405]

Other incentive mechanisms have not been as successful and have either been dropped, or the incentive strength reduced. One example is the losses incentive mechanism that was introduced in the third price control for electricity distribution (DPCR3). Ofgem estimated that losses accounted for 1.5% of GB's greenhouse gas emissions. It sought to put in place a structured financial incentive mechanism on operators to reduce emission. However, Ofgem had to remove the mechanism for the fifth price control (DPCR5) as it had concerns about the quality of the data. This was both due to changes made by companies to their methodology and problems in the settlement data used. For DPCR5, Ofgem replaced the incentive with a reporting requirement. For ED1 (the first electricity distribution price control under RIIO), Ofgem introduced a Losses Discretionary Reward (LDR). Companies could apply for funds under the LDR, but they had to pass a set of criteria to be rewarded.[406] A licence condition was also introduced which required the networks to develop a distribution losses strategies and ensure the losses are as low as reasonable possible.[407] Networks' strategies need to be supported by CBA. Ofgem also allowed expenditure where it was lower than the value of the lost electricity including an estimate for the carbon reduction.

For most outputs Ofgem requires companies to report their performance on an annual basis. Ofgem publishes annual reports on the companies' performances:

- *"**Reliability**: We expect companies to improve network reliability and reduce the number and duration of power interruptions.*
- ***Connections**: Companies will provide a better service for customers wanting to connect to the network.*
- ***Customer Service**: We incentivise companies to deliver good customer service and listen to stakeholders.*
- ***Social Obligations**: Companies will do more to help vulnerable customers, particularly during power interruptions.*
- ***Environmental**: Companies must reduce their carbon emissions and other environmental impacts.*
- ***Safety**: Companies are funded to ensure the network remains safe and meets Health and Safety Executive standards"*[408]

Topic	Details
	In addition to performance against the outputs, Ofgem publishes financial information such as expenditure against allowances, and return on regulated equity. For RIIO-2, Ofgem has focused on ensuring that returns are fair (i.e. not too high). It noted that: *"Network company returns in RIIO-1 have been higher than expected when the price control was set. In some cases, the outperformance reflects genuine innovation and efficiency, which improves services and reduces costs for consumers. In others, it has been the result of factors not linked to the companies' own actions."*[409]
Competition	Ofgem has sought to increase competition for a number of services that were traditionally provided by the networks. This includes connections and metering. For connections, in electricity distribution, Ofgem initially set a regulated margin on all connections that it considered could be contestable. This was to encourage new entrants and prevent the regulated companies from under-cutting the new entrants by not charging a commercial level margin. Ofgem also considered opening up large value (£100m) transmission projects up to competition as well.[410] This idea developed from Ofgem's successful offshore transmission operator (OFTO) tendering program.[411] It was considered that new, separate, and high value transmission assets could be competitively tendered. This evolved into the Competition Proxy Model (CPM). The CPM works by benchmarking the allowed financing costs of electricity transmission projects at the level expected from an equivalent project subject to a competitive tender. The data for the model is largely sourced from the OFTO regime.[412] However, Ofgem has dropped this approach, at least for current projects, on the basis that the WACC is not higher under the CPM model compared to a incorporating it under the RIIO RAB model.
Other incentive mechanisms	Ofgem has a broad suite of incentive mechanisms. Below we have highlighted a few that may be of more interest to IPART. **Stakeholder Engagement Incentive (SEI)** During DPCR5, Ofgem introduced a Stakeholder Engagement Incentive (SEI). This provided a discretionary monetary reward based on an independent panel's view of the companies' stakeholder engagement. This was continued in RIIO-1.[413] The SEI required companies to provide Ofgem with an annual submission that details what the companies have done to ensure they are engaging with stakeholders. The submission should set out evidence of: • Independent evaluation / audit – to assess the network company's approach to stakeholder engagement covering: process of engagement, quality of engagement, senior management

[403] Ofgem (2010b), *Handbook for implementing the RIIO model*, October, page 31.

[404] Accent (2008), *Expectations of DNOs & Willingness to Pay for Improvements in Service*, July.

[405] https://www.ofgem.gov.uk/data-portal/customer-satisfaction-network-operators-electricity-distribution-riio-ed1

[406] Ofgem (2015a), *Losses Discretionary Reward Guidance Document*.

[407] Ofgem (2014), *RIIO-ED1: Final determinations for the slow-track electricity distribution companies – Overview*, December, page 15.

[408] https://www.ofgem.gov.uk/data-portal/network-indicators

[409] Ofgem (2019a), page 134.

[410] https://www.ofgem.gov.uk/electricity/transmission-networks/competition-onshore-transmission

[411] https://www.ofgem.gov.uk/electricity/transmission-networks/offshore-transmission

[412] Ofgem (2020a), page 11.

[413] CEPA (2018b), *Review of the RIIO framework and RIIO-1 performance,* a report prepared for Ofgem, page 126.

Topic	Details
	buy-in, impact on culture, organisational activities and senior decision-making, cost effectiveness, likely outcomes for customers / communities etc; • Relevant accreditation schemes; • Results and feedback from stakeholder engagement surveys; • Evidence of culture change, senior management buy-in, e.g. as reflected in key strategic documents and decision-making arrangements within the company. • the nature of the stakeholder engagement activities undertaken which led to the showcased outcomes/action plans; • how these outcomes fit with the organisation's stakeholder engagement strategy; • any impact the outcomes have had on policies, procedures, business plans and/or organisational culture; • any impact the outcomes have had on stakeholder groups; • any mechanisms by which the outcomes are monitored and reported within the organisation; • any outcomes/action plans which are considered best in class and/or portray an innovative approach.[414] A similar incentive mechanism was introduced for electricity distribution businesses, but it had a further element for the companies to demonstrate how they were addressing the needs of vulnerable customers. For RIIO-2, Ofgem has replaced the SEI, instead relying on Stage 2 of the BPI. **Connections engagement** Ofgem introduced an incentive on connections engagement during RIIO-ED1. This was introduced after Ofgem identified, through consultation with stakeholders, that the company's communication on connections was lacking.[415] **Innovation funding/ competition** For RIIO-2, Ofgem has set out that it will retain its innovation stimulus package (see below), which provides funding for projects that might not otherwise be delivered under the RIIO framework.[416] As part of RIIO-1 Ofgem introduced the Electricity Network Innovation Competition (NIC). This is an annual competition allowing electricity network companies to compete for funding for the development and demonstration of new technologies, operating and commercial arrangements. There is up to £70 million of funding available each year.[417] The scheme has two stages: • Initial screening – Annual competitions start when network companies submit project proposals to the initial screening process (ISP). During the ISP Ofgem considers whether proposals are eligible to be considered for funding based on the eligibility requirements. Only projects considered eligible can process to the full submission stage • Full submission – An independent expert panel is appointed by Ofgem to consider the submissions and provide Ofgem with a recommendation on whether they should be provided NIC funding. The criteria used to assess the submissions can be summarised as: • Accelerating the development of a low carbon energy sector and/or delivers environmental benefits whilst having the potential to deliver net financial benefits to future and/or existing customers. • Provides value for money to customers.

[414] Ofgem (2018b), *Stakeholder Engagement Incentive Guidance*, December.

[415] Ofgem (2015b), *Incentive on Connections Engagement (ICE) Guidance document*, April.

[416] Ofgem (2018a), page 32.

[417] Ofgem (2019f), *Decision on the 2019 Gas and Electricity Network Innovation Competitions*, November.

Topic	Details
	• Generates knowledge that can be shared among all relevant Network Licensees. • Is innovative. • Involvement of other project partners and external funding. • Relevance and timing • Ready to implement
Protecting the environment	Ofgem gets guidance on policy objectives for environmental issues from the government. While the companies are to inform their business plans with customer engagement Ofgem also set out that a "*key objective of the RIIO-2 Framework is that network companies support the transition to a smarter, more flexible, sustainable low-carbon energy system and take the appropriate steps to mitigate their own environmental impact."*[418] Ofgem set out that it expects companies to focus on three impact areas: • Decarbonising the energy networks – with a focus on business carbon footprint and embedded carbon in networks. • Reducing networks' other environmental impacts i.e. pollution to local environment; resource waste; biodiversity loss; and other adverse local effects that are specific to each sector. • Supporting the transition to a smarter, more flexible, sustainable low-carbon energy system.[419] Ofgem intends to use licence obligations, price control deliverables, reputational, and financial output delivery incentives (ODIs) to drive improvements from the networks. Ofgem has set out specific part of the RIIO framework related to environmental concerns are: • Companies embedding considerations for the three impact areas into their RIIO-2 Business Plans in the form of an Environmental Action Plan. Ofgem expects that the action plan explains how a company will take responsibility for the environmental impacts of their network in RIIO-2. • Companies publishing an annual environmental report. This will set out the environmental impact of the network, progress in delivering their action plan during RIIO-2, and the evolving role of the network in the low carbon energy transition. This will be a new Licence Obligation and it will require that the network companies work with stakeholders in the development of the environmental report. • Sector specific common output delivery incentives for companies to reduce environmental impacts that are material, measurable, and controllable. • Potential bespoke ODIs Ofgem's environmental considerations are direct by government policy. For example, legislation in the UK sets a target of net zero greenhouse gas emission by 2050 (and 2045 in Scotland). However, while Ofgem is directed by Government policy, it has a large degree of autonomy around the rules and actions it takes to achieve environmental goals. For example, in its Strategic Narrative Ofgem set out that it is seeking to achieve the net zero aim by: • ***"Taking a whole systems approach**: we need to break down the existing silos across the energy value chain. This will facilitate more competition and create new business opportunities that benefit consumers. We will consider the environmental impacts of all our ongoing regulatory decisions. Increasingly, we will need to think beyond the energy sector as the heat and transport sectors are decarbonised. We will continue to focus on ensuring security of supply for Great Britain's energy system. We will also update our guidance on sustainability, to better inform our decision making processes, particularly in the light of Government's ambition of net-zero emissions by 2050.*

[418] Ofgem (2019a), page 47.

[419] Ofgem (2019a), page 49.

Topic	Details
	• *Operating our environmental schemes efficiently and effectively: we will maximise value for money for consumers through the way we administer these schemes. We will focus on providing an effective deterrent to unethical behaviour, fraud and noncompliance and will flag to their owners (such as Government) risks relating to the schemes we operate on their behalf."*[420].
Vulnerable customers	Ofgem employs a number of different approaches to ensure that networks support vulnerable customers. For gas distribution, Ofgem has a number of protections for customers in vulnerable situations. For RIIO-2 this includes: • stronger minimum service standards; • higher GSL payments; • funding (via collection of revenue from other customers) to connect fuel poor households; and • measures for networks to work with households and business to deliver integrated energy solutions. Ofgem set out the following package:

Minimum Standards	Licence Obligation to provide priority services for specific customer groups
	Guaranteed Standards of Performance
	Fuel Poor Network Extension Scheme
	Principles-based Licence Obligation on treatment of consumers in vulnerable situations
Supporting Flexibility	Consumer vulnerability and carbon monoxide safety use-it-or-lose-it allowance
	Innovation funding
Incentives supporting ambition and delivery	Business Plan Incentive
	Consumer vulnerability reputational incentive

Source: Ofgem (2019a)

Some things that happen in GD1, included 80,000 connections for fuel poor households (funded via an allowance recovered from all customers), GDNs prioritising the provision of heating and cooking devises to vulnerable customers during outages. GDNs engaging with vulnerable customers.[421]

For ED1, Ofgem pushed the DNOs to take a range of approaches to assist vulnerable customers. DNOs already had a number of licence obligations including maintaining a Priority Services Register (PSR), which contains information on who is vulnerable to supply interruptions. Special services must be provided to these customers.

The most significant incentive for DNOs with regard to vulnerable customers during ED1 was the Stakeholder Engagement and Customer Vulnerability (SECV) Incentive. DNOs are awarded funding based on their strategies being rated well by an independent panel. The panel's decision focuses on:

- A strategic understanding of and commitment to the role that network companies can play in tackling social issues relevant to vulnerable consumers;

[420] Ofgem (2019c), *Our strategic narrative for 2019 – 23*, July, pages 7-8.

[421] CEPA (2018b), page 104.

Topic	Details
	• Engagement with stakeholders to improve the data and information that they hold on vulnerable consumers and what they do with it; • Network companies' approach to management and use of the Priority Services Register (PSR) and associated services; • Network companies' approach to develop and utilise partnerships (e.g. referral networks) to identify and deliver solutions (both energy and nonenergy) for vulnerable consumers; and • Embedding their strategy for addressing consumer vulnerability in their systems, processes and how they manage consumer interactions.[422]
Maintaining economic and financial sustainability	Ofgem assesses the financeability of companies to ensure they can finance their activities to meet their licence obligations. Ofgem assesses financeability based on a notional company (i.e. with a hypothetical efficient capital structure), Ofgem financeability assessment has reference to the key metrics that credit rating agencies would look at. However, it bases its analysis on regulatory finance, rather than accounting, information. The key ratios Ofgem considers are: • Adjusted Interest Cover Ratio (AICR) or Post Maintenance Interest Cover Ratio (PMICR). • Funds from operations (FFO) + cash interest / net debt. • FFO/ Cash Interest. • FFO/ Interest expense. • FFO + Interest expense / Net debt.[423] However, as the analysis is done on a notional company, Ofgem does note that company-specific financeability constraints (e.g. due to scale or timing of capital investment). Ofgem has left itself the options to adjust capitalisation or depreciation rates to deal with financeability constraints in the short-medium term.[424] Ofgem also updates the companies' revenue allowances on an annual basis via its Price Control Financial Model (PCFM). If a company becomes financially distressed during a price control, in addition to mechanisms to prevent this, Ofgem has broadly three options: • Price control reopener. • Trade sale (although this is not specifically an option Ofgem can exercise). Energy administration.[425]
Any other relevant points	Ofgem has proposed to implement equity indexation. This is done by updating the allowed return on equity to reflect change in the risk-free rate.[426] Ofgem's used innovation project information during RIIO-ED1 to set an additional efficiency challenge (referred to as the 'smart grids benefits'). The innovation project information was sourced from projects that had been granted innovation funding during the previous price control. Ofgem also used the innovative approaches adopted by some networks to set tougher targets for other networks.[427]

[422] Ofgem (2018c), December, page 9.

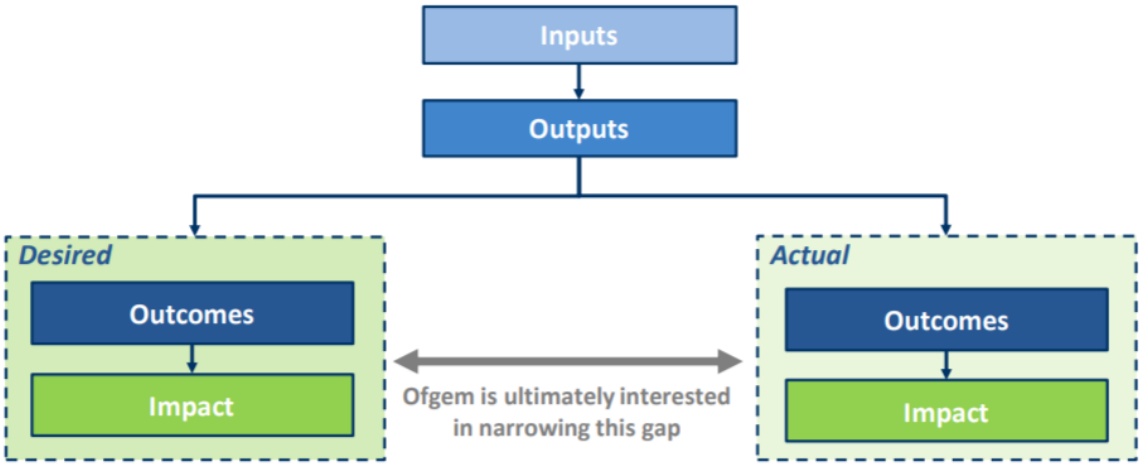
[423] Ofgem (2019e), *RIIO-2 Sector Specific Methodology Decision – Finance*, page 85.

[424] Ofgem (2019e), page 92.

[425] Ofgem (2009), Arrangements for responding in the event that an energy network company experiences deteriorating financial health, October.

[426] Ofgem (2019a), page 121.

[427] Ofgem (2014), pages 142-143.

Topic	Details
How does the regulator measure success?	Ofgem engaged CEPA to undertake a review of its RIIO-1 success,[428] and RIIO was introduced after a review (RPI-X@20) of its framework. Ofgem also undertook and impact assessment of its proposed RIIO-2 framework assessed the proposed changes against a number of different options.[429] Ofgem as also recently undertaken analysis of the distributional impacts of economic regulation.[430] We have already noted a number of changes above, however Ofgem seemed to place a heavy emphasis on the return on equity that companies were earning. It was concerned that the financial outperformance of the GDNs and TOs during GD1 and T1 were not necessarily a result of the companies delivering consumers value for money.[431] Aside from assessing RIIO against its objectives, Ofgem did not appear to set specific 'success' criteria. In our review of RIIIO, we tried to assess whether RIIO had delivered against the intended outcomes and impacts. We used an Inputs – Outputs – Outcomes – Impacts evaluation framework to assess the performance of RIIO.[432] *Figure F.4: Assessment framework*  *Source: CEPA (2018b)*

[428] CEPA (2018b).

[429] Ofgem (2019g), *RIIO-2 Network Price Controls Draft Impact Assessment*, July.

[430] Ofgem (2020b), *Assessing the distributional impacts of economic regulation*, May.

[431] Ofgem (2018a), page 10.

[432] CEPA (2018b), Annex B.

Appendix G ONTARIO ENERGY BOARD (OEB)/ ENERGY UTILITIES

Topic	Details
Overview	The Ontario Energy Board (OEB) is the regulatory body for natural gas and electricity utilities in Ontario, Canada. The OEB oversees the Province's electricity and natural gas sectors through regulation in accordance with the objectives set out in the governing statutory framework.[433] The OEB's mandate is determined by the provincial government and is embodied in legislation, regulation and directives. Some of the key elements of OEB's regulatory regime include: • an adjudication process used to review applications on infrastructure and rate-setting from utilities, with a proportionate review system based on past performance and alignment with OEB policy; • a utility performance scorecard that evaluates each utility's annual performance against a set of metrics; and • a recent change in cost assessment methodology toward an activity and program-based benchmarking (APB) approach, which marks a shift from the total cost benchmarking (TCB) method which assesses expenditure after aggregating operating and capital expenditures. **Adjudication and proportionate review** OEB carry out many of their regulatory duties – licensing, rate applications, and infrastructure applications – using a courtroom style, adjudication process. The OEB recently streamlined this process by implementing a proportionate review procedure.[434] In the proportionate review process, applications are subject to different levels of review depending on: • the historical performance of the applicant, including scorecard results and customer feedback; • the application's alignment with OEB policy; and • the nature of the application, for example whether the utility is applying for a capital project or if approval would result in workforce changes. **Annual performance scorecard** The OEB requires each utility it regulates to measure and publish the results of an annual utility performance scorecard.[435] The scorecards include metrics on: • Service quality, which includes metrics on connection and appointment timing; • Customer satisfaction, such as billing accuracy and complaints; • System reliability, including the frequency and length of power disruptions; and • Cost control, which comprises of an efficiency rating based on how efficiently utilities manage their costs, and a metric for total costs per customer. These scorecards provide consumers with transparent information about the performance of their utility and holds utilities accountable for failure to satisfy regulatory criteria. Scorecards are also used by OEB when determining the level of review that a utility's rate application requires, which offers utilities incentives to meet the scorecard targets.[436] **Cost benchmarking**

[433] OEB (2016a), *2016-2019 Business Plan*.

[434] OEB (2017s), *Linking Utility Performance and Regulatory Review.*

[435] OEB Utility Performance and Monitoring

[436] OEB (2017a).

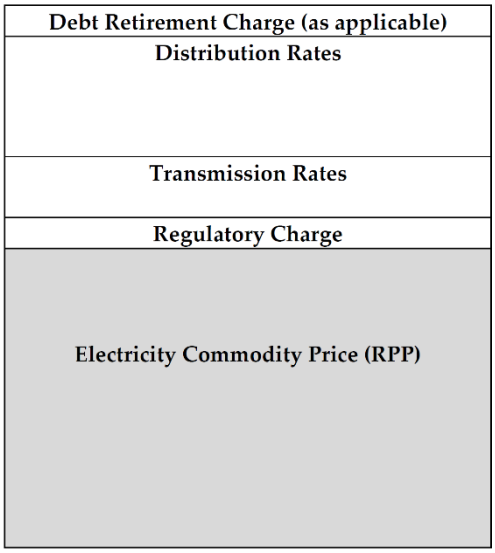
Topic	Details
	Until recently the OEB followed a TCB approach to cost assessment for electricity distributors.[437] This approach involved aggregating capital and operating costs, without determining activity or program based expected costs. The OEB outlined the drawbacks of the TCB approach in a 2019 Staff Discussion Paper on cost benchmarking, citing that the current approach does not provide useful information at the program-based level. The OEB now intend on following an APB approach to cost assessment for electricity distributors. The objective of this approach is "to establish a framework to enable the comparison of utility cost performance in specific capital and OM&A activities/programs, thereby further helping OEB assess utility efficacy at delivering value to customers."[438] The discussion paper outlines a shortlist of ten activities and programs to be used in the new cost benchmarking process, split into operating and capital expenditure. The OPB plans to implement APB for all regulated entities, including transmission and gas distribution companies.
Regime type	The OEB acts as a quasi-judicial tribunal when approving rates for the distribution and transmission of electricity and natural gas. Pricing regimes of utilities vary from revenue cap, price cap and custom incentive rate-setting, but all rate applications must pass the OEB's adjudication process before being implemented. OEB's 2019 to 2022 business plan sets out the mandate and objectives of the regulatory body.[439] The OEB's mission is to promote a viable, sustainable and efficient energy sector that serves the public interest and assists consumers to obtain reliable energy services that are cost effective. On the supply side, OEB's mandate is to: • Set rates and prices that utilities can charge; • Monitor the financial and operational performance of utilities; • Assess major infrastructure projects, including new electricity transmission lines and natural gas pipelines; • Assess mergers and acquisitions of electricity and natural gas distributors; • Establish and enforce regulation on the conduct of utilities and other industry members; • License electricity and natural gas entities On the demand side, OEB aim to: • Protect the interests of gas and electricity consumers on prices, retail markets and utility performance; • Communicate consumer rights and responsibilities; and • address needs of low-income consumers via utility customer service rules and assistance programs.
Industry structure	The OEB is responsible for regulating electricity and natural gas utilities that operate in Ontario's energy market. Most entities that OEB regulates are owned by provincial and municipal governments but there are some private organisations, particularly in the retail market. In the electricity sector there are LDCs (which can be retailers), retailers and the independent electricity system operator (IESO). There are currently60 LDCs operating in Ontario and most have a monopoly on the delivery of electricity in a region.[440] Around 95% of households and businesses receive their electricity directly from LDCs but there are a small number of energy

[437] OEB (2019a), *Staff Discussion Paper: Activity and Program Based Benchmarking For Electricity Distributors*

[438] OEB (2019a).

[439] OEB (2019b), *2019-2022 Business Plan*

[440] OEB Local electricity utilities or local distribution companies

Topic	Details
	retailers that are licensed by the OEB to fulfil energy delivery contracts.[441] The OEB regulates the price of electricity and delivery rates of LDCs but does not regulate the prices that retailers offer.[442] In the gas sector there are natural gas utilities and gas marketers. There are three natural gas utilities that service Ontario, which are regulated similarly to LDCs in electricity, with most companies having a monopoly on the delivery of natural gas in the regions they serve.[443] There are eight gas marketers licensed by the OEB that operate in the natural gas retail markets. The price of gas, as well as transportation, storage and distribution rates are regulated by the OEB for natural gas utilities but are not regulated for gas marketers.[444]
Price control process	The OEB undertakes many of its regulatory functions through a quasi-judicial tribunal process. The functions of the tribunal include licensing, rate applications and infrastructure applications, such as the construction of transmission lines.[445] Retail electricity price rate-setting is determined through this adjudication process. Utilities submit rate applications to the Board, which are examined via oral or written public hearings. The OEB then renders and communicates the decision on rates to the applicant and other stakeholders. When determining retail electricity prices, the total rate is split into distribution rates, transmission rates, regulatory charge and the electricity commodity price.[446] *Figure G.1: Retail electricity price under the regulated price plan*  *Source: OEB (2016) RPP Manual* **Transmission rate**

[441] OEB Ontario's energy sector

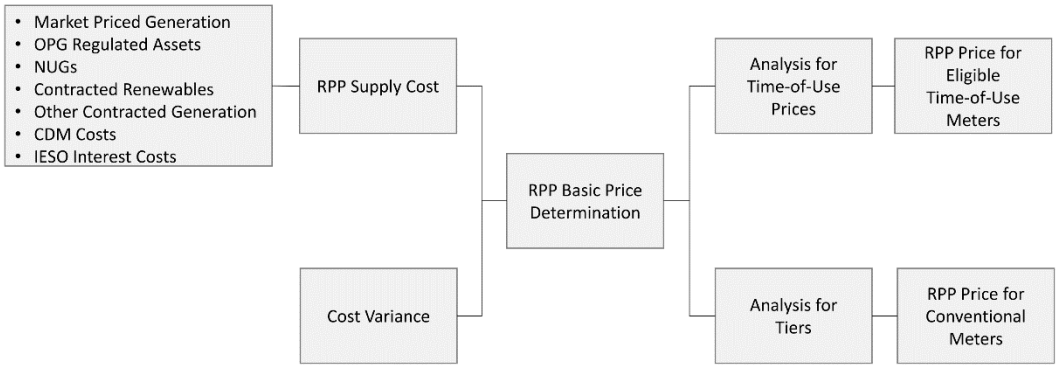
[442] OEB Licensed energy retailers

[443] OEB Ontario's energy sector

[444] OEB Ontario's energy sector

[445] OEB (2009), *Resource guide for regulated entities.*

[446] OEB (2016b), *RPP Manual.*

Topic	Details
	Electricity transmitters apply to the OEB each year to request to change their transmission rates. Any changes are based on OEB-approved revenue requirements and other charge determinants of each transmitter and the OBE then determines uniform transmission rates.[447] Distribution rate Electricity distribution charges are administered similarly to transmission charges, where utilities submit applications to the OEB for approval of rates via an adjudication process. There are three rate-setting methods available to electricity distributors: price cap rate-setting, annual incentive rate-setting index, and custom incentive rate-setting.[448] **Electricity commodity price** The electricity commodity price, which is the largest portion of the retail electricity price, is determined via the process of setting regulated price plan (RPP) prices.[449] below illustrates the process for setting RPP prices and the decisions in that process. The RPP supply cost and the accumulated variance between actual and forecast costs (carried by the IESO) both contribute to the base RPP price, which is set to recover the full costs of supply. The rest of the process is also based on price forecasts and of consumption patterns. For consumers with eligible time-of-use meters that are being charged on the basis of time-of-use prices, the next step is to analyse the pattern of prices in order to determine what the pattern of prices should be, both in terms of the three price levels (on-peak, mid-peak and off-peak) and in terms of the daily times of application of these prices. These differ seasonally. For consumers that are not being charged on the basis of time-of-use prices, the next step is to analyse the tier structure of their prices. Consumers' final RRP prices are derived from the tier structures. *Figure G.2: Process for RPP price*  *Source: OEB (2016) RPP Manual* Renewed Regulatory Framework The OEB has had to adapt to the increasing number of energy utilities needing regulation.[450] This change has substantially increased OEB's workload and required it to adopt different forms of regulation and processes to maintain efficacy.

[447] OEB Electricity transmission rates

[448] OEB 2020 Electricity distribution rate

[449] OEB (2016b).

[450] Warren (2015), *The Governance of Regulatory Agencies: A Case Study of the Ontario Energy Board.*

Topic	Details
	In 2012, OEB set out a Renewed Regulatory Framework that outlined a set of objectives to modernise the regulatory regime.[451] This includes changes to rate-setting, consumer value processes, and a streamlined adjudicative process called proportionate review. Consumer value[452] To provide value for customers, OEB have introduced: • Utility performance scorecards to communicate the year over year value and performance of utilities to customers; • And a customer engagement framework to increase consumer voices in utility investment and service planning, and make information accessible and transparent. Rate-setting[453] As part of the Renewed Regulatory Framework, OEB have implemented: • Flexible rate-setting methods, which vary from price cap, revenue cap and custom incentive rate-setting; • Access to capital between re-basing, including investment pacing mechanisms designed to manage the impact on customers, such as incremental and advanced capital modules; • And providing utilities with robust returns on equity by allowing reasonable returns on investment. Proportionate review[454] The proportionate review process allows for select utilities to have their rates approved without a hearing, or through an abridged hearing process. It intends to allow for a streamlined hearing of applications where appropriate. Relative to other possible approaches, the proportionate review process reflects 'light touch' regulation and puts a greater emphasis on past performance and public policy alignment. In the first stage of the proportionate review process, OEB determine the level of review based on the applicant's performance against historical benchmarks, the type and scale of the application in question, and how well the application aligns with OEB policy. They then select from four possible levels of adjudication: 1. no hearing 2. abridged hearing 3. focused hearing 4. fully adjudicated hearing.

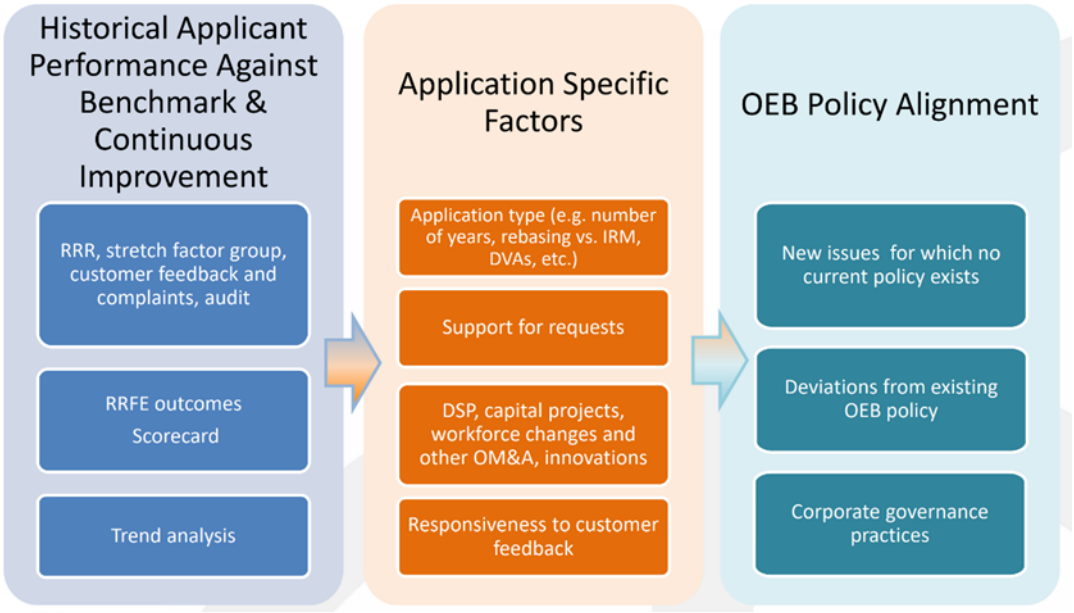
[451] OEB (2017a).

[452] OEB (2017a).

[453] OEB (2017a).

[454] OEB (2017a).

Figure G.3: Three areas to determine level of proportionate review



Source: OEB (2017a)

OEB then follow the review process corresponding to the selected level of adjudication, as outlined in Figure G.*4*.

The tribunal approach that OEB uses for rate setting, licensing and other regulatory functions allows for flexibility when dealing with utilities that have unique circumstances. And the proportional review process adds a set of guidelines for employing this flexibility to reduce the burden of individual applications from a growing number of utilities.

Despite the benefits for the regulator, tribunal approaches to regulation in Canada have come under criticism for threatening the independence of regulators. Speaking about an Ocean Port decision in British Columbia, Chief Justice McLachlin described administrative tribunals, such as the one implemented by the OEB, by saying "they are in fact created precisely for the purpose of implementing government policy."[455] This indicates that individual tribunals could be used as a means for furthering politically-motivated goals.

Figure G.4: Four main streams of the proportionate review process

	Community Meeting	Issues	Hearing Process	Cost Awards	Process & Scope
No hearing	✓	Case-by-case	-	-	No legal notice or hearing
Abridged hearing	✓	✓	✓	-	Minimal Process Few issues
Focused hearing	✓	✓	✓	For selected issues only	Moderate process Selected Issues only
Fully adjudicated	✓	✓	✓	✓	Full Process All Issues Open

Source: OEB (2017a)

Topic	Details
	It is important to note, however, that the OEB is legally accountable for any failure to comply with the principles of administrative law while it acts as a tribunal.[456] Such accountability is an important element in keeping the regulatory process fair and independent.
Role of customers and other stakeholders	**Price control engagement** OEB introduced its Consumer Engagement Framework in 2016.[457] The framework made changes to the consumer engagement process with the goal of providing consumers with clearer information and making it easier for consumers to participate. Part of the reason for the introduction of the framework (a requirement after the Government of Ontario passed Bill 112) was a lack of consumer advocacy in Ontario, and the requirement for the OEB to represent consumers interests while maintaining impartiality.[458] OEB now hold customer engagement events, including community meetings, public hearings and consumer panels, whenever a utility wishes to change their delivery rates, alter their ownership or undergo a large infrastructure project.[459] These events are either done face-to-face or via written consultations. OEB review input from consumers and other interest groups before making decisions on each application.[460] In addition to consumer engagement events, the Consumer Engagement Framework includes an enhanced consumer website; regional consumer representatives, and a dedicated OEB contact person.[461] Previously, consumer participation tools were local newspaper notices, web postings, letters of comment and interventions on behalf of consumers. **Utility engagement** Consumer feedback from the Consumer Engagement Framework process are key elements of the approval process for utility applications. For example, the Decision and Rate Order for a Erie Thames Powerlines Corporation (ETPL) application for electricity distribution rates explicitly summaries customer concerns and follow-up processes that the utility took to mitigate the concerns.[462] In this case, the utility held a series of settlement conferences to set out agreement between all the parties on the issues raised. Additionally, utilities are required to conduct customer engagement via customer surveys as part of the annual performance scorecard process. For example, Hydro One, a major electricity and gas utility, conducts biennial surveys of its customers though professional research companies to better understand customer priorities and satisfaction.[463] These types of surveys are also used to gauge a utility's performance against certain targets, such as surveying consumer knowledge of electrical safety to determine if the utility has been successful in raising public awareness of electrical safety.

[455] Ocean Port Hotel Ltd. v. British Columbia (General Manager, Liquor Control and Licensing Branch), 2001 SCC 52 at para 24

[456] Warren (2015)

[457] OEB (2016) Consumer Engagement Framework – FAQ

[458] Fremeth, A., Holburn, G., (2016), *Consumer Advocacy in Ontario's Energy Sector: A New Model, Energy Regulation Quarterly*, Volume 4, Issue 3, September.

[459] OEB Hearings

[460] OEB (2017b), *OEB Staff Summary of Community Meeting: Erie Thames Powerlines Corporation Application for 2018 Rates*

[461] OEB (2016c), *Consumer Engagement Framework – FAQ*

[462] OEB (2017b).

[463] Hydro One (2019,) *2018 Scorecard – Hydro One Remote Communities Inc.*

Topic	Details
	Other stakeholders In addition to customers, other stakeholders can engage in the OEB's rate-setting process.[464] Stakeholders can submit written questions, cross-examine the utility and other witnesses at oral hearings, file evidence and make written or oral arguments.[465] The OEB requires frequent intervenors to annually file information on their mandate, membership, and constituency to help the OEB and other parties assess the basis for the intervenor's interest in a particular proceeding. Frequent intervenors include energy producers, consumer groups, environment advocates, and landlords associations.[466]
Pricing	The OEB follows the Regulated Price Plan (RPP) to set electricity prices, which has been in place since 2005.[467] RPP prices, which appear on the Electricity line of eligible customer bills, are set based on a forecast of how much it will cost to supply electricity to RPP consumers over the next 12 months. RPP prices are reviewed twice a year (in the spring and in the fall) and are reset as required to recover the cost of electricity supply. The OEB sets the actual rates that customers pay. This process is guided by a set of principles. These principles include: • Fairness: customers should pay for the costs they cause (although for commercial customers OEB applies a beneficiary pays approach).[468] • Stability: customers need to be able to plan their budgets, any changes should be gradual. • Simplicity: complex rate structures add cost and make it harder for customers to understand. • Effectiveness: distributors recover their costs.[469] The OEB has a policy of mitigating rate and bill impacts when it makes a change to the rate design. For example, when it implemented a change to residential rate design in 2014 it put in place a four year transition period.[470] This transition was chosen after the OEB undertook extensive analysis on the bill impact of the changes.[471]
Approach to assessing efficient and prudent expenditure	Total cost benchmarking OEB has used cost benchmarking to measure utility cost effective performance since 2006 and in 2013 they introduced a total cost benchmarking (TCB) approach.[472] The TCB approach aggregates overall operating and capital costs at an aggregate level and does not assess activities separately. The TCB model uses econometric estimates to benchmark distributor costs on an annual basis. The model determines efficiency rankings of each electricity distributor using data provided through the Reporting and Record-keeping Requirements. The model generates a predicted value for total costs which is then compared against the distributor's actual costs.

[464] OEB, https://www.oeb.ca/participate/applications. Accessed 9 June 2020.

[465] OEB, https://www.oeb.ca/participate/intervenors. Accessed 9 June 2020.

[466] OEB, https://www.oeb.ca/industry/applications-oeb/intervenor-information/annual-filings-frequent-intervenors. Accessed 9 June 2020.

[467] OEB (2005), *Regulated Price Plan (RPP)*

[468] OEB (2019), *Rate Design for Commercial and Industrial Electricity Customers Rates to Support an Evolving Energy Sector – Staff Report to the Board (EB-2015-0043), February*, page 9.

[469] OEB (2015), *A New Distribution Rate Design for Residential Electricity Customers (EB-2012-0410)*, April, page 2

[470] OEB (2015), page 3.

[471] Warren (2015).

[472] OEB (2019a).

Topic	Details
	OEB uses the TCB model results to inform their annual assignment of 'stretch factors' to distributors, which inform the efficiency incentives set for distributors which have rates set by one of the OEB's incentive rate mechanisms. Move to activity-based benchmarking In a 2019 OEB staff discussion paper, OEB critique the current TCB procedure and admit that this approach is limited as it fails to assess cost performance at a program or activity level.[473] Activity and program-based benchmarking (APB), such as the approaches used by the Australian Energy Regulator (AER) and Ofgem, provide utilities or regulators with more specific information to identify areas for improvement. OEB outlined a strategic goal of moving toward a program-based benchmarking framework as part of its 2017-2020 business plan. Further detail on implementation of this approach is outlined in the OEB's 2019 APB Staff Discussion Paper. OEB's objective of the APB approach is "to establish a framework to enable the comparison of utility cost performance in specific capital and OM&A activities/programs, thereby further helping OEB assess utility efficacy at delivering value to customers."[474] OEB have outlined an initial shortlist of ten activities and programs, split into operating and capital expenditure. *Figure G.5: Short list of preliminary activities/programs for benchmarking*

OM&A	Group 1 Average Costs - OM&A ($m)	Capital	Group 1 Average Costs - Goss Capital ($m)
Vegetation management (Right of Way)	161	Poles, Towers and Fixtures	4713
Billing	124	Transformers (excludes station transformers)	3898
Meter Expense	81	Distribution station equipment	1919
Line operation and maintenance	90	Meters	1326
Distribution station equipment	50		
Maintenance Poles, Towers and Fixtures	29		

The discussion paper assesses three potential approaches to implementing the APB approach via statistical cost benchmarking:

- Unit cost analysis
- Cost/volume analysis
- Econometric modelling

The OEB is currently in the process of reviewing stakeholder comments on the 2019 staff discussion paper before finalising draft determinations. The OEB plans to implement APB for

[473] OEB (2019a).

[474] OEB (2019a).

Topic	Details
	all regulated entities, including transmission and gas distribution companies, with the aim of implementing the framework over the next five years.[475]
Services and performance	**Utility scorecards** OEB publishes electricity utility scorecards to measure how well each of Ontario's utilities are performing each year.[476] The scorecard is designed to encourage utilities to operate effectively, continually seek ways to improve productivity and focus on improvements that their customers value. Utilities report their scorecard performance results annually and make the results available to the public. **Error! Reference source not found.** provides an example of a custom performance report of Hydro One Networks Inc., comparing the utility's annual performance against different scorecard metrics between 2014 and 2018. The scorecards cover the following performance criteria: • Service quality, which includes metrics on connection and appointment timing; • Customer satisfaction, such as billing accuracy and complaints; • System reliability, including the frequency and length of power disruptions; and • Cost control, which comprises of an efficiency rating based on how efficiently utilities manage their costs, and a metric for total costs per customer.[477] *Figure G.6: Performance metrics*

LEGEND: ● = the target was met. ● = the target was not met. | **EXPORT**: EXCEL

Performance Year	New Residential/Small Business Services Connected on Time (Target: 90%)	Billing Accuracy (Target: 98%)	First Contact Resolution	Customer Satisfaction Survey Results	Level of Compliance with Ontario Regulation 22/04 (Target: substantially compliant)	Number of General Public Incidents	Average Number of Times Power to Customer is Interrupted
2018	99.32% ●	99% ●	87%	86%	C ●	11	2.21
2017	98.06% ●	99% ●	85%	85%	C ●	8	2.32
2016	98.6% ●	99% ●	82%	84%	NI ●	11	2.47
2015	97.5% ●	99% ●	82%	85%	C ●	5	2.63
2014	97.4% ●	95% ●	79%	85%	NI ●	4	2.70

Source: OEB (2020) Electricity utility performance dashboard

Market surveillance panel

OEB also has a market surveillance panel that monitors, investigates and reports on activities and behaviour in the IESO-administered markets in Ontario's electricity sector.[478]

The Panel's specific responsibilities include:

- Monitoring activities and behaviour and recommending remedial action;
- Investigating market activities and the behaviour of specific energy companies or energy-related agencies (for example, if they are suspected of gaming or abusing their market power) and making recommendations related to the results of its investigations; and
- Reporting on the results of its monitoring and investigations.

[475] OEB (2019a).

[476] OEB Hydro One Networks Inc. Utility Performance Scorecard

[477] OEB describe the performance measures here: https://www.oeb.ca/sites/default/files/uploads/Scorecard_Performance_Measure_Descriptions.pdf

[478] OEB Electricity market surveillance

Topic	Details
Competition	The energy sector in Ontario has been deregulated since 1998, when the Energy Competition Act was enacted.[479] Since then, the Ontario energy market has seen a large increase in the number of electricity distribution companies established, as well as the emergence of energy retailers.[480] The natural gas market has a small set of natural gas utilities and energy retailers, known as gas marketers. LDCs and gas utilities have natural monopolies in energy distribution but there is competition in the retail energy market between distributors and retailers. There is typically only one LDC or gas utility in a particular region due to the infrastructure costs of establishing a distribution network; this gives distributors a natural monopoly over energy distribution.[481] Residents and small businesses are generally not able to choose the LDC that provides electricity to their property or business. However, it is possible to choose to be served by an energy retailer that is licensed to use the LDC's infrastructure to deliver electricity. The prices offered by energy retailers are not regulated by the Ontario Energy Board, but they must acquire a license to operate and are subject to other forms of compliance.[482] The utility performance scorecards and the new proportionate review process offer incentives for energy companies to align their business plans with the regulator's objectives. The new proportionate review process rewards applications that align with policy objectives of the regulator and applications that come from utilities that have performed well in the past. The utility performance scorecards are part of this proportionate review assessment, and serve to incentivise utilities to meet and exceed the regulator's targets
Protecting the environment	Ontario's green energy legislation has required the OEB to shift its focus of regulation toward conservation, demand management, and incorporating renewable energy resources. Sets of legislation and directives, including the Ontario Business Corporations Act, require both gas and electricity utilities to meet conservation and demand management targets, and to integrate renewable energy sources into their systems.[483] For example, the 2019-2022 OEB Business Plan puts forward an OEB initiative to conduct mid-term reviews of the six-year conservation framework in order to judge how well gas utilities are progressing toward their conservation targets.[484] Note however that OEB has shifted focus from green energy recently due to a change in Provincial government, which repealed the 2009 Green Energy Act in 2018.[485]
Vulnerable customers	OEB has two programs to assist vulnerable customers: (i) the Low-income Energy Assistance Program (LEAP); and (ii) the Ontario Electricity Support Program (OESP). • LEAP provides emergency financial help for vulnerable consumers who are behind on their electricity and natural gas bills and face having their service disconnected.[486] • OESP provides monthly on-bill credits for lower-income customers to reduce their electricity bills. Certain demographics, including lower-income Indigenous Ontarians qualify for a higher level of assistance.[487]

[479] Ontario Energy Board Act, 1998, S.O. 1998, c. 15, Sched. B

[480] Warren (2015) The Governance of Regulatory Agencies: A Case Study of the Ontario Energy Board

[481] OEB Ontario's energy sector

[482] OEB Licensed energy retailers

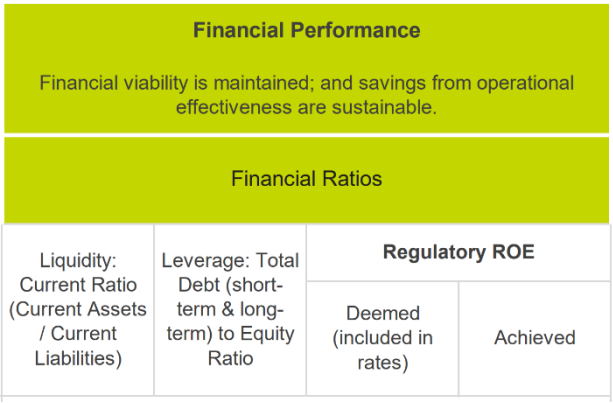
[483] Warren (2015) The Governance of Regulatory Agencies: A Case Study of the Ontario Energy Board

[484] OEB (2019) 2019-2022 Business Plan

[485] OEB (2019) 2019-2022 Business Plan

[486] OEB Low income energy assistance program

[487] OEB Ontario electricity support program

Topic	Details
	• Additionally, electricity and rate-regulated gas utilities have to follow special rules when dealing with low-income customers; for example, waiving security deposits and allowing longer payment times under arrears payment plans.[488]
Maintaining economic and financial sustainability	The financial performance of regulated entities is assessed as part of the OEB utility scorecards. This section of the scorecard contains metrics on the financial viability of utilities and the amount of savings generated from utility operations (Figure G.7: Financial performance metrics, 2018 OEB Utility Scorecards).[489] As the metrics are published annually, the OEB can monitor the impact of price decisions as they progress through the price control period. *Figure G.7: Financial performance metrics, 2018 OEB Utility Scorecards*  *Source: OEB (2018) 2018 Sector-Wide Consolidated Scorecards of Electricity Distributors* An advantage of the court room adjudication process over a standard price control process is that regulated utilities operate under individual contracts and can submit applications for review when needed. As a result, the utility can engage in consultations with the regulator to adjust terms that could otherwise cause the utility to become unprofitable if shocks occur and the economic or financial viability of the regulated firm is put at risk.
Any other relevant points	**Innovation sandbox** The OEB launched a regulatory innovation sandbox in 2019.[490] The aim of the sandbox is to provide a streamlined and accessible way for the OEB to support innovators to test new ideas, products, services and business models in electricity and natural gas. The sandbox includes: • **Information service** – This allows innovators to have an informal dialogue with OEB prior to submitting a written proposal. • **Project-specific support** – This requires a written proposal and is set up into two streams. The first stream allows the OEB to consider offering a temporary exemption from a regulatory requirement. The second stream allows the OEB to offer customised guidance, for example setting out written assurances that a project does not raise compliance concerns. There are five eligibility criteria: 1. Consumer benefit and protection – Projects must demonstrate a reasonable prospect of providing clear benefits to consumers. 2. Relevance – The project must relate to natural gas or electricity services in Ontario.

[488] OEB Low income energy assistance program

[489] OEB 2018 Sector-Wide Consolidated Scorecards of Electricity Distributors

[490] https://www.oeb.ca/_html/sandbox/process.php

Topic	Details
	3. Innovation – The project must involve testing a new product, service or business model. 4. Readiness – Upon submission the proponent must demonstrate preparation and readiness to test their innovation in a live environment. 5. True regulatory barrier – For stream 1 proposals the proponent must articulate the regulatory issues that prevent the project moving forward.
How does the regulator measure success?	The utility scorecards are the primary means of measuring success for utilities. Many of the metrics on the utility scorecards are given pass or fail marks depending on the utility's performance, which gives utilities targets to achieve and the regulator a means of setting and adjusting tangible objectives it expects utilities to meet.[491] The OEB 2019-2022 Business Plan also introduces an OEB Performance Measurement Framework to monitor OEB's own performance. The framework establishes metrics to assess its performance over the long term and measure whether the regulator is delivering the intended outcomes.[492] There are 19 activity-based metrics each with a performance indicator. *Figure G.8: Metrics for engagement with consumers & regulated entities*

OEB ACTIVITY	OBJECTIVE	2019-2022 METRICS (%)
Consumer calls	Answer incoming calls within 20 seconds	90
Consumer correspondence	Respond to general correspondence within 10 business days	85
Consumer voicemail messages	Respond to voicemail received by 12:30pm within the same day	80
Consumer voicemail messages	Respond to voicemail received after 12:30 pm by the next business day before 12:30 pm	80
Consumer satisfaction	Overall satisfaction survey score	80
Consumer complaint letters	Mail complaint follow-up letters to consumer within two business days	80
Consumer complaint letters	Mail a follow-up letter to consumers after receiving a response from the licensee within two business days	80
Consumer enquiry letters	Mail enquiry response letters within two days	80
Industry Relations enquiries	Respond to Industry Relations enquiries within 10 days	90
Regulatory applications	Issue final decisions in accordance with metrics established by Management Committee (see subsequent table)	80
Innovation Sandbox Process	Meet with parties within 20 days of an initial request to do so	100
Innovation Sandbox Process	Issue decision, where required, on Sandbox proposal in accordance with metrics	100

Source: OEB Business Plan 2019-2022

[491] https://www.oeb.ca/utility-performance-and-monitoring

[492] OEB (2019) 2019-2022 Business Plan

Topic	Details

Figure G.9: Total period elapsed to OEB decision (days) by Application type

APPLICATION TYPE	WRITTEN PROCESS	ORAL PROCESS
Municipal franchise or certificate	90	205
Leave to construct or gas storage designation	130	210
Well drilling	130	210
Licence	90	210
A review of a s.80 or 81 notice of proposal under s.82 (generation, transmission, distribution ownership prohibition)	170	220
Section 86 (change of ownership or control of systems)	130	180
Distribution rates	185	235
Distribution rates (streamlined)	140	N/A
Quarterly rate adjustment filings - gas	21	N/A
General application	120	170
Sandbox decision (if required)	185	N/A

Source: OEB Business Plan 2019-2022

Appendix H ENVIRONMENTAL PROTECTION AGENCY (EPA)/ WASTEWATER

Environmental Protection Agency – Financial Capability Assessment of US wastewater utilities

Background

The US water sector is highly fragmented, with thousands of water systems operated at a municipal level.[493]

The US Environmental Protection Agency (EPA) is responsible for the administration of two federal statutes: the Clean Water Act, which requires wastewater services to meet certain standards for the discharge of polluting substances; and the Safe Drinking Water Act, which specifies maximum contaminant levels in drinking water.[494]

Investment required to comply with the statutes is financed by ratepayers, creating a trade-off between regulatory requirements, the financial stability of utilities, and the fiscal stress on consumers.[495]

Financial Capability Assessment – Current rules

In 1995 and 1997, the EPA developed affordability criteria to identify situations where wastewater[496] regulations might result in undue economic hardship within a community.[497] Based on this Financial Capability Assessment (FCA), the EPA could grant some flexibility (through an extended compliance schedule) for utilities striving to comply with the regulations.

The EPA provided guidance on the analysis a municipality should undertake to evaluate the economic impact of complying with water quality standards. The analysis follows a two-phased approach based on two indicators:

- The Residential Indicator (RI), the first to be considered, focuses on the affordability of charges for individual households by examining the average per household cost of wastewater services relative to a benchmark of 2% of the service area's Median Household Income (MHI).
- The Financial Capability Index (FCI) is a composite indicator of the ability of the community (and therefore of the municipal utility) to finance the water system.[498] It combines bond rating, net debt as a percentage of full market property value, the MHI, local unemployment, property tax revenues as a percent of full market property value, and property tax collection rate within a service area.

The EPA issued a new FCA framework in 2014, allowing communities to provide additional data for assessment beyond the RI and FCI. However, these two metrics were retained as a common starting point for the assessment of every utility and they are still in use.[499]

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[493] World Bank, https://ppp.worldbank.org/public-private-partnership/water-regulation-separate-regulatory-body-licensing-regime#united. Last updated 9 November 2019. Accessed 5 June 2020.

[494] National Academy of Public Administration (NAPA, 2017), *Developing a New Framework for Community Affordability of Clean Water Services*, prepared for the EPA, October, p. 1.

[495] Raucher, Rothstein, and Mastracchio (2019), *Developing a New Framework for Household Affordability and Financial Capability Assessment in the Water Sector*, prepared for AWWA, NACWA and WEF, April, p. E-1.

[496] EPA's consideration of the affordability of potable water supply is limited to assessing the national-level affordability of regulatory options for small communities. See Raucher et al. (2019), p. 1-7.

[497] Raucher et al. (2019), p. E-1.

[498] Raucher et al. (2019), p. 1-6 and 1-7.

[499] NAPA (2017), p. 47.

Proposed changes to the FCA methodology[500]

Following a congressional directive to update EPA's policies, the American Water Works Association (AWWA), the National Association of Clean Water Agencies (NACWA), and the Water Environment Federation (WEF) have proposed a new framework to address perceived shortcomings of the current methodology:

- The MHI is a poor indicator of economic need.
- The RI is an incomplete measure, as it only includes wastewater costs.
- The methodology is static and does not account for historical and future trends.[501]

To assess household affordability with a stronger focus on vulnerable customers, the new framework would replace the RI with two indicators:

- the combined cost of basic water services (i.e. water used for drinking, cooking, health and sanitation) as a proportion of the lower quintile income in the service area; and
- the percentage of households below 200% of the Federal Poverty Line.[502]

To assess the financial capability of the utility to make capital improvements, the new framework relies on long-term cash flow modelling. The cash flow forecasts would include projections of operation and maintenance expenses, capital needs, and debt service requirements under a variety of scenarios, depending on specific capital programs required to comply with regulations. This would allow to determine the rate increases required to finance alternative capital program schedules.

The model would be used to select a viable financial plan, i.e. one that enables the financing of required system improvements by allowing for a 'reasonable' increase in charges over time. The reasonable increase would be negotiated by the utility with the EPA. Projects that exceed the budget constraints identified by the model would be deferred.[503] In the proponents' words:

> *"household affordability and a utility's financial capability provides limitations on what can be done, or at least the pace at which it can be done, to protect public health."*[504]

While considerations specific to each utility and service area would inform the determination of what constitutes a viable rate increase, common principles may also be applied, such as inflation indexing and comparisons with peer utilities.[505]

The new framework allows to consider household affordability and the utility's financial capability jointly and dynamically (rather than sequentially and statically, as in the current FCA methodology). As the cash flow model determines the rates increases required to implement the capital program, the model user can also evaluate the forecast impact on household affordability over time.[506]

[500] This section discusses amendments to the current FCA methodology proposed by water industry stakeholders. As of May 2020, EPA was yet to release its updated financial capability guidance. See United States Conference of Mayors, https://www.usmayors.org/2020/05/16/u-s-environmental-protection-agency-to-consider-changes-to-the-way-it-assesses-community-affordability-and-compliance/ (accessed 5 June 2020).

[501] Raucher et al. (2019), p. E-2.

[502] Raucher et al. (2019), p. E-3 and E-4.

[503] Raucher et al. (2019), p. E-6 and E-7.

[504] Raucher et al. (2019), p. E-10.

[505] Raucher et al. (2019), p. E-8 and E-9.

[506] Raucher et al. (2019), p. E-10.

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