



# **Network price controls: Proposals for a Cross-Utility approach**

## **A Consultation**

**September 2011**

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## EXECUTIVE SUMMARY

### Introduction, background and changing policy context

1. Price controls involve scrutiny of utility company revenue projections by the Regulator. This results in the Regulator determining a future level of revenue and associated incentives for the utility company over the period of the price control.
2. The Utility Regulator currently carries out ten price controls, as well as two shadow price controls for the gas transmission assets owned by Mutual Energy Ltd. There are currently five price controls in the electricity sector, covering: transmission and distribution (NIE T and D); supply (Power NI); the market operator (SEMO); the system operator (SONI) and the power procurement business (PPB). In gas there are four price controls, covering: the South-North and North-West transmission pipelines (BGE (UK)); the two gas distribution networks (Phoenix Natural Gas Limited and firmus) and supply (Phoenix Supply Ltd). In water there is one price control covering the integrated water supply and sewage services provided by Northern Ireland Water.
3. This consultation paper aims to get stakeholders' views about the future approach to network price controls in the electricity, gas and water sectors. Therefore while the focus of the consultation is on network price controls (water and the gas and electricity transmission and distribution businesses) many of the conclusions will also apply to other price controls. There are two key drivers behind the consultation - a changing policy context and the need to achieve an enhanced level of consistency, in the approach to price controls, across the Utility Regulator.
4. In energy the key policy development has been the move to a low carbon economy with a UK target of 80% reduction in greenhouse gas emissions by 2050 with substantial decarbonisation of electricity generation by 2030. These changes are likely to have a significant impact on the nature, scale and location of the demand for electricity and gas network services. In water there is the need to deliver against a background of rising environmental standards as well as the need to adapt to and mitigate the effects of climate change.
5. There is a need to ensure, where appropriate, enhanced consistency on price control methodology and processes across the Utility Regulator. Developing a consistent cross-utility approach has the potential to improve the efficiency and effectiveness of the price control process. At the same time it must be recognised that differences in approach between different sectors may be appropriate due to differences, for example, in statutory duties, policy context and the maturity of the regulatory process. This paper aims to identify areas where there might be a commonality of approach on the principles, processes and methodologies used in price controls.
6. There are many similarities in the approaches used in our price controls. In line with its statutory objectives the Utility Regulator, historically, has focused on driving cost efficiencies in regulated businesses using what has been described as the 'RPI-X' framework. Use of the established building blocks approach (opex

plus depreciation and rate of return), a cost of capital within the Capital Asset Pricing Model (CAPM) framework and an aim to have five-year price controls have been common to all network price controls. Differences remain in particular between the approaches in water and in energy (gas and electricity); and the extent of benchmarking – which separates out water from the other two sectors, as does the use of a Reporter.

7. Recent reviews by Ofgem (RPI-X@20) and Ofwat have concluded that the changing policy context, and in particular the greater emphasis on environmental objectives, has implications for the way in which network price controls are carried out. There is a consensus that, in the future, there is likely to be greater uncertainty about the investment requirements for energy and water networks. This in turn requires a greater need for longer-term strategic thinking and innovation. All three factors underpin the need for enhanced stakeholder engagement and a greater focus on outputs, including behaviours and longer-term outcomes.

### **Form and duration of price controls**

8. The paper (Chapter 4) reviews the form and duration of price controls. It proposes that the current ex-ante approach should be retained. The ex-ante approach is where the regulator specifies, in advance, the limits (e.g. revenue or maximum prices) within which the company is constrained. This is in line with the conclusions of the recent Ofgem review. Following that review, Ofgem has decided to move to eight years for network price controls but the Utility Regulator is proposing to retain our existing practice of five years for network price controls. We believe this strikes the right balance between providing strong incentives to reduce costs while not exposing either companies or consumers to undue risk. This remains the approach of other regulators in Great Britain (GB). For smaller non-network companies we are proposing a minimum of three years duration though this will depend on changing circumstances particularly in the retail sector.

### **Incentivisation**

9. Issues surrounding incentivisation in price controls are discussed in Chapter 5. At the outset we note that incentivisation of cost efficiency remains a key objective of network price controls. The long-established approach where companies are incentivised to achieve efficiencies on their allowed revenues and to retain a share of any outperformance remains an important component of our price controls. The scope for achieving further cost efficiencies remains in all price controls. In water, benchmarking has shown gaps in efficiency between Northern Ireland Water (NI Water) and comparable GB companies.
10. We also note that some regulators in GB are placing greater emphasis on measuring and incentivising outputs. This approach moves beyond incentivising the efficient provision of physical delivery of pipes and wires etc to incentivising behaviours and outcomes. This, in part, reflects a more complex policy context with wider policy objectives for network companies. It also reflects a need to reflect better customers' needs in terms of service and quality. Among regulators

in GB, Ofgem has progressed this most with the development of an incentive framework - linking performance in a range of key outputs to the rate of return on equity which a company can achieve.

11. Within the Utility Regulator, the focus on outputs has been progressed most in water with the development of an Overall Performance Assessment (OPA) which is used to identify and monitor key outputs in that sector. Delivery of these outputs is not incentivised financially but there is a reputational incentive underpinning the setting, monitoring and publication of these output indicators. While there is an element of output based incentives in electricity - where penalties are applied to under performance of certain guaranteed standards - the concept of output incentivisation is much less developed. As a first step, we are proposing that energy should follow water and identify a range of appropriate outputs in line with price control objectives as well as wider Utility Regulator strategic themes. Like water currently, it is envisaged that the incentives underpinning these outputs would be reputational in the first instance but with a view - at a later date - to developing financial incentives which would impact directly on rates of return on equity in network companies.
12. In a wider discussion on the relative merits of reputational versus financial incentives we conclude that financial incentives should continue as the primary incentive to achieve cost efficiency. The continued use of reputational (in addition to financial) incentives to promote cost efficiency in water is also proposed; this reflects the well-documented gap in efficiency between NI Water and GB comparators. As noted above, it is also proposed that reputational incentives will be used in the first instance to encourage desired behaviours and outcomes (outputs). The scope for using financial incentives will be considered at a later date commencing with energy networks.
13. We propose to continue to calculate separate opex and capital allowance and apply incentives separately to each. In doing so, we will aim to minimise the incentives and opportunities for companies to game incentives and produce inefficient allocation of resources between opex and capex. We will not at this stage introduce the totex approach to benchmarking but will leave the option open once we have improved our benchmarking approach capabilities which are under-developed, particularly in energy. We will aim, where possible, to equalise incentives and introduce on a consistent basis, across gas, electricity and water, an agreed approach to regulatory accounting rules for the allocation of expenditure between opex and capex.

### **Opex incentives**

14. When developing incentives for opex we propose to categorise expenditure according to the extent to which it is both controllable and predictable. Incentives will be focused primarily on expenditure which is controllable. Expenditure which is deemed uncontrollable particularly where it is also unpredictable will be more likely to be considered for risk mitigation measures.
15. To date, in Northern Ireland when incentivising opex we have allowed companies to retain the benefit from opex under-spends for the duration of the price control.

This tends to act as an incentive to discourage companies from identifying efficiency savings in the latter half of the price control period. Regulators in GB and elsewhere have introduced the concept of a rolling opex incentive which allows a company to keep any savings for a fixed time period irrespective of when the saving has been made. We propose to introduce this approach across all our price controls with savings in network price controls being retained typically for five years. We will however, where a company over-spends on opex, confine any penalties to within the price control period. We believe this is a sufficient incentive to discourage companies from over-spending. This will be reinforced by ensuring that any such over-spends are not automatically reflected in the allowed revenue in the subsequent price control - with the case for any such increases closely scrutinised.

### **Capex incentives**

16. Capex expenditure, particularly where it consists of one-off or discrete projects, tends to be less easy to incentivise. This compares with opex or indeed replacement capex (repex) projects which are more continuous and less 'lumpy' in character. Applying the sort of incentives we are proposing for opex to these more 'lumpy' (i.e. the incidence of projects is more one-off in character) capex projects can sometimes lead to undesirable effects. It can encourage firms to defer capex even if leads to poorer service/higher cost for customers in the longer-term. It may also incentivise a company to produce inefficient solutions when viewed from a longer term perspective. Finally, it can encourage a company to make inaccurate price control submissions and can also discourage innovative solutions - particularly where there are significant up-front costs - despite lower costs and /or improved outputs in the longer run.
17. To address these potential shortcomings we propose introducing on a cross – utility basis :
  - a robust approach to addressing the issue of deferred capex which ensures that companies do not benefit from deferred capex unless the deferral can be clearly demonstrated as efficient;
  - annual monitoring of expenditure to address the significant information asymmetries between the regulator and regulated companies; and
  - the introduction into energy of a Reporter similar to what we currently have in water.
18. Once these initiatives are in place we would propose to introduce capex incentives similar to those for opex. In doing so we will treat replacement capex similar to opex with a rolling incentive scheme for out-performance. For the more lumpy/discrete capex projects we are proposing to confine capex out-performance benefits to the price control period.
19. Over the longer-term we see a well-calibrated system, which incentivises outputs, by linking their achievement to rates of return on equity, as also helping to address these short-comings. Such an approach should also encourage more flexibility and innovation by companies on capex expenditure. In the absence of such a regime we will give consideration to allowing companies to bring forward,

without penalties, innovative capital projects (which have not been identified at the outset of the price control, but which are judged to produce longer-term benefits to customers).

### **Cost of capital and financeability**

20. The paper (chapter 6) looks at a number of issues dealing with the cost of capital and financeability. It examines how the cost of capital is estimated comparing the CAPM model with some alternatives. Our conclusion is that we should continue to use the CAPM approach.
21. In setting the macro-economic components of the weighted average cost of capital (WACC) - the return on investment, it proposes that we should continue to be informed by the decisions of GB regulators for energy and water (Ofgem and Ofwat). Where their decisions show unexplained differences in their estimates of these variables (as they have been the case in the past for decisions made at approximately the same time) we will aim to ensure there is no inconsistency within the Utility Regulator, if faced with similar circumstances. For company specific components we will also be informed by GB judgments - while ensuring that our decisions reflect the specific circumstances of NI regulated companies and, in particular, local decisions on risk sharing between consumers and regulated companies.
22. We have examined the recent decision by Ofgem on financeability following its RPI-X review. This specifically rejects the notion of increased cash-flows to companies which cannot meet their credit rating ratios. It takes the view that network companies will be expected to manage their business efficiently, including capital structure, to ensure that they are financeable. This has been the Utility Regulator's stance historically and will continue to be so.
23. In estimating the cost of debt we propose to take into account the cost of embedded debt (i.e. the company's historical cost of existing debt). Any adjustments for embedded debt will reflect an assessment of what would have been the cost of that debt if procured efficiently and prudently. It will also be done on a symmetrical basis to ensure that both consumers and companies are protected equally.
24. We propose to reject the concept of a small company premium when calculating the WACC. To the extent that there are extra transactional costs in the financing costs of small companies we will consider this in our decisions on allowed costs, or in our decisions on debt costs - when choosing from a range of debt cost estimates.

### **Risk and uncertainty**

25. Chapter 7 looks at a number of issues dealing with risk and uncertainty. This includes a discussion on different types of risk - distinguishing between systematic and specific risks - and assesses how mitigation of these risks impacts on different components of a company's allowed revenue. The chapter concludes that anything we do as a regulator that impacts on the level of

systematic risk borne by the company should be accompanied by a corresponding adjustment to the WACC (primarily the equity component). For changes to the level of specific risk, adjustments should be made to allowable costs which we determine in our price controls. Where risk mitigation (both specific and systematic) reduces the risk of default, there is scope for a reduction in the debt premium or an increase in the optimal gearing assumption, or some combination of both.

26. We recognise that implementation of this approach is unlikely to be straightforward. It is not always easy to separate systematic from specific risks or indeed to ensure a clear connection between risk mitigation measures and a specific risk category. Similarly, it may not be easy to estimate with any degree of accuracy expected values for allowed costs and the impact on these costs of any reduction in specific risks.

27. We propose a practical approach as follows:

- as a starting point we should observe the prevailing sector WACCs set by our counterparts in GB;
- we should then, in setting our price controls, consider if the risks borne by our regulated companies mirror those of the relevant utilities in GB;
- if we judge this to be broadly the case, the GB WACC is appropriate (subject to any differences of opinion we might have on the judgments by GB regulators on the individual components of the WACC);
- expected unit values for allowed revenue are also, in such an instance, likely to be in line with GB (subject to any regional effects on costs); and
- if we judge the risks to be different we should adjust the WACC and/or expected revenues based on the approach outlined above.

We will not however allow companies to seek GB rates of return while proposing much more generous levels of risk mitigation than those facing equivalent GB companies.

28. Chapter 7 also discusses mechanisms for mitigating risk distinguishing between pass-through, correction mechanisms and interim reviews. It proposes some principles for implementation of these mechanisms, concluding:

- costs that the regulated company has little or no ability to influence should be considered eligible for treatment as pass-through;
- costs that the regulated company can substantially influence but cannot accurately forecast *ex-ante* (in advance) should be considered eligible for inclusion in a suitably designed correction mechanism;
- costs that the regulated company can substantially influence, and can be forecast with reasonable accuracy, should be granted a fixed allowances and included as part of RPI-X regime; and
- interim reviews should continue to be used only if the circumstances cited in the licence arise. There may be a need to review these to ensure consistency.



## **Reporting and monitoring arrangements**

29. Finally in Chapter 8 the consultation examines proposals for improving reporting and monitoring arrangements. We propose the use of a Reporter in energy, a consistent approach to address the issue of deferred capex and annual cost monitoring arrangements.

## CHAPTER 1 – INTRODUCTION

### Chapter summary

This chapter outlines the key drivers behind this consultation and sets out the structure of the consultation paper.

- 1.1 This consultation aims to get stakeholders' views about the future approach of the Utility Regulator to price controls. The focus of the consultation is on network price controls (water and the gas and electricity transmission and distribution businesses) but many of the conclusions will apply to other price controls. We recognise that there is a need to do some further work on how best to deal with risk and reward in price controls with a small capital base. This will be addressed in a separate consultation exercise.
- 1.2 There are two key drivers behind the consultation:
  - a changing policy context; and
  - the need, where appropriate, for consistency of approach across the Utility Regulator. Linked to this has been an objective to promote better learning and sharing of ideas on regulatory best practice across the three price control directorates.

### The changing policy context

- 1.3 The energy policy context is changing and this will have profound effects on both our gas and electricity networks. The move to a low carbon economy with a UK target of 80% reduction in greenhouse gas emissions by 2050 and decarbonised electricity generation by 2030 is expected to alter the nature, scale and location of demand for gas and electricity network services. It is likely to lead to a significant increase in network investment while at the same time there remains significant uncertainty about what the networks need to do to meet these challenges. This was a key driver behind the RPI-X @20 initiative conducted by Ofgem and it has led to changes in the approach to the regulation of energy networks in GB.
- 1.4 The challenges facing the water sector are also changing. Ofwat's March 2010 strategy document 'Delivering sustainable water' identified a number of challenges, many of which apply also to Northern Ireland including;
  - adapting to and mitigating the effects of climate change;
  - rising environmental standards including implementing the EU Water Framework Directive; and
  - economic uncertainty and affordability issues.

The Ofwat paper notes that these challenges will be quite different in nature and scale from the past. As a consequence Ofwat has also commenced a comprehensive review of its price control process entitled 'Beyond Limits- how should prices for monopoly water and sewerage services be controlled?'

## Consistency of approach

- 1.5 There is a need to ensure, where appropriate, a consistent approach on price control methodology and processes across the Utility Regulator. Developing a consistent cross-utility approach has the potential to improve the efficiency and effectiveness of the price control process. At the same time it must be recognised that differences in approach between different sectors may be appropriate due to differences for example in statutory duties, policy context and the maturity of the regulatory process. This paper aims to identify areas where there might be a commonality of approach on the principles, processes and methodologies used in price controls. Potentially leading on from this, there may be scope for organisational changes and better resource allocation within the Utility Regulator, though any such changes are not within the scope of this paper.

## Structure of the consultation paper

- 1.6 The rest of the paper is organised as follows:
- **Chapter 2** provides background on the approach to price controls within the Utility Regulator;
  - **Chapter 3** describes the changing policy context and examines its implications;
  - **Chapter 4** sets out our views on the form and duration of price controls;
  - **Chapter 5** sets out proposals for incentivisation in price controls;
  - **Chapter 6** explains our approach to cost of capital and financeability;
  - **Chapter 7** examines the issues when we are dealing with risk and uncertainty; and
  - **Chapter 8** sets out proposals for reporting and monitoring arrangements, including the role of the Reporter and an approach to deferred capex.

## Responses to the consultation

- 1.7 The Utility Regulator welcomes response to the specific questions posed in this consultation and any additional comments which respondents may wish to make. A consolidated list of these consultation questions is included at Annex 1. Please send comments **by 13 December 2011** to:

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Belfast  
BT1 6ER

Or email: [dermot.maccann@uregni.gov.uk](mailto:dermot.maccann@uregni.gov.uk)

- 1.8 Individual respondents may ask for their response, in whole or in part, not to be published, or that their identity should be withheld from public disclosure.

Where either of this is the case, we will ask respondents also to supply us with the redacted version of the response that can be published.

- 1.9 As a public body and non-ministerial Government department, we are bound by the Freedom of Information Act (FOIA) which came into full force and effect on 1 January 2005. According to the remit of the Freedom of Information Act, it is possible that certain recorded information contained in the consultation response can be put into the public domain. Hence, it is now possible that all responses made to the consultation will be discoverable under FOIA, even if respondents ask the Utility Regulator to treat responses as confidential. It is therefore important that respondents note these developments and in particular, when marking responses as confidential or asking the Utility Regulator to treat responses as confidential, should specify why they consider the information in question to be confidential.

## **CHAPTER 2: BACKGROUND ON THE APPROACH TO PRICE CONTROLS WITHIN THE UTILITY REGULATOR**

### **Chapter summary**

This chapter summarises the range of price controls carried out by the Utility Regulator and key objectives for the regulator - in relation to price controls as determined by its statutory duties. It describes the RPI-X framework and notes that our price controls are broadly conducted within that framework. The key similarities in approach used by the Utility Regulator across all three sectors, as well as the most significant differences, are also identified.

### **Price controls carried out by Utility Regulator**

2.1 The Utility Regulator currently carries out 10 price controls as well as two shadow price controls for the gas transmission assets owned by Mutual Energy Ltd. There are currently five price controls in the electricity sector, covering: transmission and distribution (NIE T and D); supply (Power NI); the market operator (SEMO); the system operator (SONI) and the power procurement business (PPB). In gas there are four price controls, covering: the South-North and North-West transmission pipelines (BGE (UK)); the two gas distribution networks (Phoenix Natural Gas Limited and firmus) and supply (Phoenix Supply Ltd). In water there is one price control covering the integrated water supply and sewage services provided by Northern Ireland Water.

### **Price control objectives**

2.2 While the statutory duties differ in detail between sectors they each contain two key objectives for the regulator in relation to price controls:

- (a) to protect the interests of customers; and
- (b) to ensure that licensees are able to finance their activities.

Additionally, in the case of gas, there is also an emphasis on the expansion of the gas network, a reflection of the relative immaturity of the gas network in Northern Ireland.

### **RPI-X framework**

2.3 Historically, price controls in Northern Ireland (as in GB) have been focused on driving cost efficiencies in regulated businesses for the benefit of customers. This has been the key objective of the RPI-X framework though it has been complemented by requirements on companies to maintain certain standards of service for customers. The RPI-X approach was first developed in the UK in the 1980s and was a means of providing appropriate incentives for regulated companies to achieve efficiencies and to reveal information to the regulator. A useful summary of this approach which was contained in

Ofwat's 'Beyond Limits - How should prices for monopoly water and sewerage services be controlled?' is outlined below.

## **Regulation by price limits**

The so-called 'RPI-X' approach to price limit regulation in the UK was originally developed by Professor Stephen Littlechild for application to British Telecom in the early 1980s. It was a means of providing appropriate incentives for regulated companies to achieve efficiencies and to reveal information to the regulator.

Under price limit regulation, the regulator sets a price (or series of prices) for a given period (the 'control period') on the basis of the best information it has about the efficient cost of providing the regulated product.

The regulated company has an incentive to achieve at least the efficiencies anticipated by the regulator because if it fails to do so it will not recover its costs. It also has an incentive to achieve greater efficiencies because it will enjoy additional profits for the remainder of the control period.

At the next price control, the regulator benefits from the information the company has revealed about its efficient costs, takes this into account when it next sets price limits and customers benefit as a result.

Source Ofwat - 'Beyond Limits'

## **Similarities and differences across the three industry sectors**

2.4 All Utility Regulator price controls are broadly incentive based within this RPI-X framework. There are therefore many similarities in the approaches adopted by the Utility Regulator across its regulation of the three sectors. Amongst the main similarities are:

- use of the established building blocks approach (opex plus depreciation plus return) to set network price controls;
- scrutiny of a business plan provided by the company to assess appropriate levels of opex and capex, with some use of consultants to review the business plans;
- setting of WACC within a CAPM framework, although there are then differences in the precedents used to set the WACC, including the degree to which the chosen WACC is linked to decisions in Great Britain (GB);
- a general intention to set five year controls for the main network price controls, although a shorter period has been initially adopted for the water price controls and for a number of non-network price controls;
- a broadly similar approach to consultation based on a minimum of one public consultation followed by a decision document; and

- there are moves to collect cost information on a more systematic annual basis than has previously been the case. This has already commenced for gas and water. It is due to start in electricity networks from the beginning of RP5. The process and data requirements have already been defined for capex. Opex will depend on the form of the price control.

2.5 Nevertheless, there are also important differences, including:

- a variable approach to benchmarking, with some use of benchmarking compared to equivalent companies elsewhere in GB, but little use of cross sector benchmarking;
- the use of a Reporter in the water sector to review the company's business plan before its submission to the Utility Regulator;
- the role of the Government and environmental regulators is much greater in the water sector than either of the other sectors; and
- with the exception of the water sector and some of the smaller electricity price controls, there is very limited use of behavioural incentives as part of the price controls.

2.6 Some of these differences reflect difference in legislation e.g. the role of government and environmental regulators in water. Some also reflect the different maturities of the regulatory process. Regulation of water has only commenced and, with an efficiency gap of around 40% to GB comparators i.e opex costs are over 60% higher (relative to other water companies), there is a case for robust regulation. In contrast, RPI-X regulation has been applied to the electricity network for almost 20 years and significant efficiencies from privatisation have been implemented. The introduction in energy of more robust benchmarking, similar to water, may provide evidence of the need for further efficiencies.

2.7 An important explanation for many of the differences is the Utility Regulator's decision,, in many instances, to follow the precedents provided by the relevant GB sector regulator (Ofgem or Ofwat). These sector regulators do not always have consistent approaches.

<p><b>Q1. Do respondents consider that this chapter sets out an accurate description of the current position in Northern Ireland?</b></p>
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## CHAPTER 3: CHANGING POLICY CONTEXT AND ITS IMPLICATIONS

### Chapter summary

This chapter outlines the key policy decisions which we consider have altered the policy context in which price controls are conducted. This new policy context, which puts greater emphasis on environmental objectives, has implications for price controls. These include, against a background of increased uncertainty, the need for longer-term strategic thinking and greater innovation when making decisions, leading to a need for a greater focus on assessing and incentivising outputs and stakeholder engagement.

### Changing policy context

- 3.1 In recent years, policy decisions being made at EU, UK and regional levels are resulting in new objectives, beyond those of efficiency and customer standards, which require to be considered within the context of price controls. The key policy initiatives that are likely to impact future price controls are discussed below.

### Low carbon economy-the UK Climate Change Act

- 3.2 In recent years, there has been significant global debate on climate change and the impact on the environment of CO<sub>2</sub> emissions. The UK Government has committed under the Climate Change Act (2008), to reducing emissions of all greenhouse gases (GHGs) by at least 80% in 2050 in order to tackle climate change. This target was based on advice provided by the Climate Change Committee (CCC) in the report “Building a low-carbon economy”. The 80% target includes those emissions produced within the Devolved Administrations - Scotland, Wales and Northern Ireland.
- 3.3 The CCC’s December 2008 report found that meeting the 2050 target at least-cost relies on substantial decarbonisation of the power sector by the 2030s and that there is a key role for the power sector in decarbonising heat and transport through electrification.
- 3.4 The water sector, while not having the facilitating role of the electricity and gas sectors in ensuring the delivery of solutions and outputs that assist in the delivery of CO<sub>2</sub> reduction targets, does have a role in mitigating the effects of climate change. In addition, water and sewerage are energy intensive and can contribute to carbon reduction by promoting greater energy efficiency, using more energy from renewable sources and decarbonising energy supply.
- 3.5 Water will also need to apply more focus on adapting to climate change. Climate predictions for the UK indicate increasing weather volatility with potential for both greater water scarcity and flooding. Substantial investment and innovation will be required to ensure safety and reliability of services.



## **Renewable Energy Directive**

- 3.6 The Renewable Energy Strategy (RES) was published in July 2009 in response to the UK signing up to the EU Renewable Energy Directive - which includes a UK target of 15% (including more than 30% of electricity) from renewable sources by 2020. The RES recognises that increasing generation from renewable sources will have implications for grid investment, grid technology and grid connection policy.

## **The Third European Internal Market Directive (IME3)**

- 3.7 IME3 is the third European electricity and gas Directive of the European Commission. The IME3 package of measures aims to ensure that all European citizens can take advantage of the numerous benefits provided by a truly competitive energy market. Consumer choice, fairer prices, cleaner energy and security of supply are at the centre of the third legislative package. The market thrust of the Third Package underpins the requirement for business unbundling. While it is not yet clear how this will be delivered in either part of Ireland, a major issue is the potential for separation between investment planning and capex financing and delivery. This could bring different dynamics to capital efficiency and how it should be incentivised and potentially also the allocation of risk. A key deliverables of IME3, for both electricity and gas is the introduction of smart metering across member states. As the rollout of this may require an element of retrofit as well as new installations, there is a possible economy of scale by combining meters for electricity and gas, where appropriate.

## **Strategic Energy Framework for Northern Ireland**

- 3.8 The Strategic Energy Framework (SEF) paper was published by DETI in September 2010. It details Northern Ireland's energy future over the next ten years and reflects the many wider energy policy developments at the EU and UK level note above. The SEF envisages a more sustainable position where energy is used as efficiently as possible, where more energy is generated using renewable sources, and where generation of energy is as competitively priced as possible. In particular it also confirms a 40% target for electricity generation from renewable sources by 2020.

## **Water Framework Directive**

- 3.9 The Water Framework Directive (WFD) introduces a new holistic approach to the management of water quality, and establishes a new system for the protection and improvement of all aspects of the water environment including rivers, lakes, estuaries, coastal waters and groundwater.
- 3.10 The Directive requires all inland and coastal waters to reach at least "good status" by 2015. Achieving this ambitious target will require management planning at river basin level, linking with other key policy areas such as agriculture, land use, biodiversity, tourism, recreation and flood protection.

Requirements for public participation at key stages will lead to greater public involvement in determining the future management of our water environment.

- 3.11 The Department of Environment (DOE) is responsible for co-ordinating the implementation of the WFD in Northern Ireland, and is working closely with other departments, agencies and non-government bodies, including the Utility Regulator, to achieve the targets for 2015.

### **Role of Utility Regulator in relation to government policies**

- 3.12 It is evident from the list of policy areas above that there is a much wider and more complex policy context underpinning price controls now than has been the case historically. While this is likely to impact on all three sectors the impact is likely to be greatest and most immediate on electricity network price controls.
- 3.13 Of most significance for electricity networks are government targets for carbon reduction and renewables and the associated policy of smart metering. In the SEF, DETI has estimated that the combined cost of renewable electricity installations, together with the cost of the grid investment necessary to meet the 40% target, could be between £49 and £83 per household. It is the role of the Utility Regulator to ensure that the business plans put in place by the regulated businesses take into account government policies and targets while ensuring that the delivery of the policies is in a manner that is efficient and beneficial to the end consumers. Tensions may arise between these two objectives. In the first instance there is a need to ensure that all stakeholders are involved appropriately in these price controls particularly where there are tensions of this sort. This should help to ensure the legitimacy of any decisions by the Utility Regulator. It raises however the question whether the statutory duties of the Regulator in relation to energy are sufficient. The statutory duties of Ofgem were recently changed to reflect this new policy context and DETI has included in a scoping exercise for a new Energy Bill, the duties and obligations of the Department and the Regulator in respect of sustainability.

**Q2. Do respondents consider that we have accurately identified the key elements of the changing policy context which might be applicable to the setting of network price controls?**

#### **(a) Implication of environmental objectives for network price controls**

- 3.14 As a result of the new and evolving areas of policy across energy (electricity and gas) and water, there is now a greater emphasis on consideration of the environment in the plans and associated costs included in network price controls. This is demonstrated in recent reviews of regulation carried out by Ofgem (RPI-X@20 Review<sup>1</sup>) and Ofwat ('Future Challenges'<sup>2</sup>). The

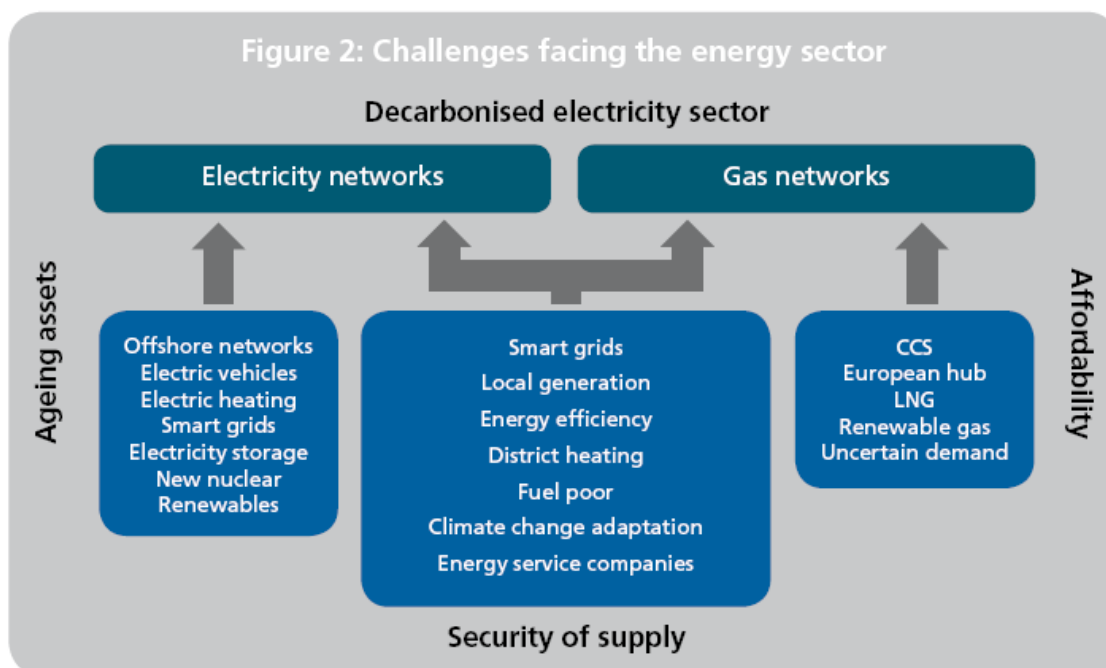
<sup>1</sup> <http://www.ofgem.gov.uk/Networks/rpix20/Pages/RPIX20.aspx>

<sup>2</sup> <http://www.ofwat.gov.uk/future>

implications of environmental targets on network price controls are discussed under the following 5 broad categories.

### Longer-term strategic thinking

3.15 In Ofgem’s RPI-X@20 review, they identified the significant changes that need to occur in the electricity and gas industries in order to achieve the targets for reduction in CO<sub>2</sub> (and other greenhouse gas) emissions. The key changes, identified by Ofgem, are depicted in the diagram below:



Source RIIO: A new way to regulate energy networks- A Final Decision (October 2010) P.9

3.16 Many of the issues and options for delivery are new. Both the electricity and gas industries are entering a period where decisions need to be made that will have dramatic impacts on the design, costs and performance of networks in the future. Therefore it is imperative that a longer term strategy is in place, preferably covering the period up to 2050. The plans for future price control periods then need to be aligned with the overall long term strategy. There will be significant assumptions required as part of the longer term strategy and these will need to be assessed and modified as new information and innovations are discovered. The key objective for regulators is to ensure that any investments align with the overall strategy to negate the possibility of stranded assets where possible.

3.17 Ofgem is also considering the longer-term future within their ‘Future Challenges’ programme.

*“The water and sewerage sectors face many challenges over the long term, including climate change, population growth and an uncertain economic environment. The nature of these challenges makes the delivery of services more uncertain than ever before. The sectors need better information to make informed decisions. They also need to be encouraged to take decisions that are flexible enough to be adapted to whatever the future actually brings. This means that as the economic regulator we need to be better informed. We need to make sure the frameworks we choose are flexible and adaptable enough for the sectors to succeed.”*

As part of their price controls, Ofwat have required that the regulated businesses produce a ‘Strategic Direction Statement’<sup>3</sup>. This sets out the strategy for each business over the next 25 to 30 years and helps put the price control period (five years) in context of the longer term aims. In Northern Ireland the Department for Regional Development are scoping the development of a water strategy for Northern Ireland which would inform future water price control of high level policy and strategic objectives. The Utility Regulator is also minded to require NI Water to produce a Strategic Direction Statement as part of the more strategic price control to commence in 2015. . NIE have been asked to produce a strategic statement as part of their submission for RP5.

## **Greater innovation**

3.18 One of the areas that the CCC has investigated as part of its remit is Low Carbon Innovation. The Committee published its report (Building a low-carbon economy – the UK’s innovation challenge<sup>4</sup>) on the 19th July 2010. The Committee’s main findings are:

- (a) *A reduction in current levels of public funding (£550m per year) would increase risks of missing carbon budgets and would forego opportunities to build a green economy in the UK. Increased funding will be required for key technologies (e.g. electric vehicles).*
- (b) *There are opportunities for the UK to lead the development of low-carbon power generation and transport technologies, particularly in:*
- *Carbon Capture and Storage (CCS) for power*
  - *Offshore wind*
  - *Marine (wave and tidal power)*
  - *Aviation technologies*
  - *Smart grids and smart meters, and*
  - *Electric vehicle technologies*

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<sup>3</sup> <http://www.ofwat.gov.uk/pricereview/sds/>

<sup>4</sup> <http://www.theccc.org.uk/reports/low-carbon-innovation>

*(c) A longer-term focus is required for energy and related technology policy objectives given the requirement to achieve an 80% reduction in emissions by 2050. Government needs to set out its long-term strategy on low-carbon innovation out to 2050, in order to ensure that investment is focused on the research and development of those technologies that will enable the UK to meet this target and ensure wider economic benefits.*

- 3.19 It is worth noting the significant emphasis the CCC has put on the electricity sector and the need for innovation in relation to environmental and economic areas.
- 3.20 Ofgem has proposed, in its review, the introduction of a time-limited innovation stimulus for electricity and gas networks. This will be open to projects at any point in the innovation cycle and to both network companies and third parties for innovation related to delivering the networks required for a low carbon energy sector. This is an issue which will need to be reflected in our price controls probably starting with RP5, though it is not obvious that initiatives which work at a GB level will be appropriate for a small region like Northern Ireland. In small regions the encouragement of technology transfer and knowledge dissemination can be more cost-effective than the direct encouragement of innovation. In this context it is useful to note that Ofgem will seek to facilitate the sharing of intellectual property and lessons learned as a result of their innovation stimulus package, thereby ensuring that the benefits are shared with the wider industry.

### **Increased uncertainty**

- 3.21 As discussed above, the move towards longer term strategic thinking and innovation relates to the fact that the nature, scale and location of the demand for future networks services (in particular electricity) are uncertain.
- 3.22 It is recognised that the environmental targets will result in different design specifications for and operation of the networks, with significant additional investment needed. The introduction of smart grids, smart meters, new generation and developments in electric cars all add to the uncertainty in network design parameters. The uncertainty in investment options may also increase the risks for investors that could have a knock on effect on the returns required depending on which party bears the risks.
- 3.23 Ofwat has also identified a number of areas of uncertainties and future challenges. These include:
- adapting to climate change
  - mitigating the effects of climate change
  - worldwide water scarcity
  - a growing population
  - complying with stringent environmental standards

## Enhanced stakeholder engagement

3.24 The issue of increased uncertainty, and the need for longer-term strategic thinking and more innovation has led to greater focus by Ofgem and Ofwat on stakeholder engagement.

3.25 Ofgem envisages this being achieved by:

- encouraging network companies to engage proactively with consumers on an ongoing basis. This includes developing commercial relationships with users of the network that could play a role in the delivery of a sustainable energy sector, and building on and developing relationships with other key stakeholders (e.g. environmental interest groups)
- developing their own stakeholder engagement process for each price control review, with the approach used reflecting those issues that stakeholders are most likely to wish to and able to, influence.

3.26 Ofwat also recognises the increased importance of stakeholder engagement in the price control process, where the aim is to ensure that the price limits are set for services that customers need and want, and are willing to pay for.

3.27 As part for their 'Future Challenges' review, in considering customer engagement, they are exploring the following:

- 'Different modes of engagement for different customers and at different stages of service delivery. This is because the engagement that can be expected of household customers may be different to that of business customers. The same is true for retail versus wholesale companies.
- the role of choice. Giving customers actual choice is a more powerful form of engagement than asking them to state their preferences in surveys. Choice can reveal better information about their preferences, enabling the companies to respond to them. We are keen to identify scope for greater customer choice and use of the information it reveals in setting price limits.
- the role of the regulator. The companies should focus on delivering what their customers need and want at every stage of service delivery. So, we would like to encourage customer engagement on the part of companies directly, rather than through the regulator. This means that we need to consider what role we should play in the process to satisfy ourselves that we are protecting customers adequately.'

3.28 The issue of how best to enhance stakeholder engagement is one which the Utility Regulator wishes to consider outside this consultation. We envisage as part of a more detailed implementation phase once the broad policy decisions resulting from this consultation are made.

## **Focus on Outputs**

3.29 In Ofgem's review, they have put a large emphasis on outputs and deliverables for each price control period. Similarly Ofwat in their 'Future Challenges' review focus on how best to encourage the behaviours and outcomes needed to achieve their strategic goals. This reflects the changing context of increased uncertainty and need for innovation. One key point identified by Ofgem was that outputs must be a comprehensive reflection of the outcomes that matter to the users of the network, as well as being material, controllable, measurable, comparable, applicable and legally compliant. This is considered further in Chapter 5 of this consultation.

**Q3. Do respondents agree with the above assessment of the implications of environmental objectives for network price controls?**

## CHAPTER 4 –THE FORM AND DURATION OF PRICE CONTROLS

### Chapter summary

This chapter examines options for the form and duration of price controls.

### Form

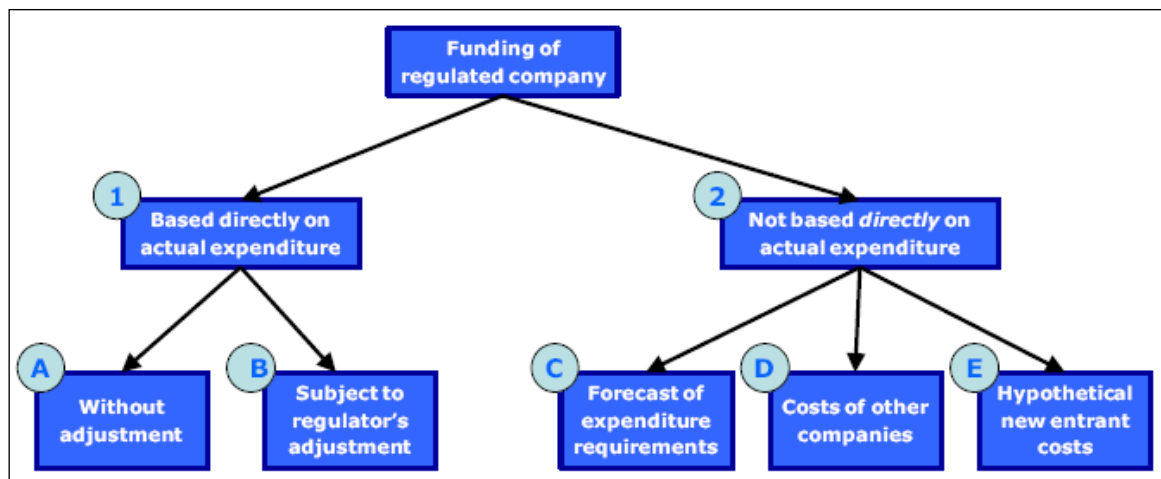
- 4.1 The term “price control” refers to a broad category of models or frameworks in which limits are placed on the prices that a regulated company can charge its customers. Ofgem, as part of the RPI-X@20 review, explored the merits of the different approaches that regulators can adopt to price controls<sup>5</sup>. These generally fit under a heading of *ex-ante* or *ex-post* regulation. However, it is accepted that *ex-ante* regimes often have *ex-post* adjustments which address risk and uncertainty issues. These issues are discussed in chapter 7.
- 4.2 In very simple terms *ex-ante* regulation is where a regulator specifies in advance the boundaries in which a regulated company can act over the control period (e.g. by setting a maximum price), and the company is then required to stay within the boundaries. Such regimes may allow prices to change in response to factors deemed outside the control of management but the control is essentially *ex-ante* as prices for the most part are set prior to the price control period.
- 4.3 *Ex-post* regulation differs insofar as a regulator may again specify in advance what the boundaries are (e.g. an *ex-ante* specification of approach to cost or a price threshold), but the regulated company is this time not required to stay within these boundaries. In the event that the company for example chooses to charge prices higher than the regulator considers appropriate, the regulator may then intervene.
- 4.4 The consultancy group LECG, who carried out a review of the pros and cons of *ex-post* regulation for Ofgem as part of the RPI-X @20 exercise, concluded that *ex-ante* regulation is typically applied in sectors where firms have persistent or significant market power. In such situations, *ex-post* regimes are not successful at restraining excessive pricing or other market abuses. A move to *ex-post* regulation tends to be more appropriate in situations where there is reduction in market power of incumbent monopolies. This results from either new entrants or the threat of new entry (e.g. telecommunications in GB). It can also be relevant where there is significant scope for countervailing power by large customers and less of a problem of asymmetry of information between suppliers and customers (e.g. airports).

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<sup>5</sup> <http://www.ofgem.gov.uk/Networks/rpix20/publications/CD/Documents1/et%20alternatives.pdf>



- 4.5 LECG in their report also took the view that ex-ante regimes may provide incentives for under-investment (spending to budget) and over-investment (by substituting capital for operating spending). They noted that Ofgem had attempted to mitigate these problems through the adoption of menu regulation and the equalisation of capex and opex incentives.
- 4.6 Ofgem considered the merits of applying *ex-post* regulation in GB against a set of criteria:
- preventing excessive pricing;
  - promoting efficiency and timely investment and innovation;
  - promoting operating efficiency;
  - minimising the regulatory burden; and
  - providing a stable and predictable regulatory process.
- 4.7 The conclusion that Ofgem reached is that for energy network companies there does not appear to be significant benefits to consumers from moving from an *ex-ante* regime to an *ex-post* regime. In reaching this conclusion, Ofgem highlight the fact that energy network companies in GB have a high degree of market power. These companies therefore face no market forces that would compel them to act in the interests of consumers.
- 4.8 Ofgem goes on to note that where regulators have sought to use *ex-post* regulation, it has been in sectors where no form of regulation existed in the first place. Indeed, some *ex-post* regimes have been adjusted to include elements of *ex-ante* regimes, and in some examples the regulator has moved entirely from an *ex-post* regime to an *ex-ante* one. The direction of travel is clearly from *ex-post* to *ex-ante* regulation, not the other way. Ofgem therefore concluded that there is not a strong case to move away from the existing *ex-ante* regulatory regimes.
- 4.9 Informed by the Ofgem and LECG analysis, the Utility Regulator takes the view that the existing ex-ante approach to price controls for both energy and water in Northern Ireland should continue.
- 4.10 With regards to *ex-ante* regulatory regimes, five different frameworks are considered in the Ofgem paper. These are summarised in the diagram below.



Source “RPI-X@20 Emerging Thinking consultation document - Alternative ex ante and ex post regulatory frameworks,” Ofgem, 20 January 2010.

4.11 The type of framework adopted by a regulator can have a significant impact on the nature and strength of incentives, and thus the behaviours displayed by regulated companies over the control period. This is explored in detail in Ofgem’s paper – a summary is set out in this table.

Model	Description	Pros	Cons
<i>The pros and cons set out below may not be exhaustive.</i>			
<b>A</b>	Regulated company is funded based on its actual expenditure, without any adjustments made by the regulator.	Simplicity. Also, full cost pass-through should result in a lower cost of capital for the company.	Company is incentivised to gold-plate everything. And there is little or no incentive for the company to be efficient.
<b>B</b>	As above, except this time the regulator can adjust the funding allowance subject to an <i>ex-post</i> review of expenditure. That is, the regulator may choose to disallow costs that are considered inefficient.	Slightly more involved than model A, but still simple. Also, whilst all costs are not fully pass-through there still should be cost of capital advantages.	Whilst the incentive to be efficient is somewhat stronger than for model A, it is still much weaker than for models C, D and E.
<b>C</b>	Regulated company is funded based on a forecast of future expenditure required to deliver expected outputs.	The regulator is much more able to protect the interests of consumers than in models A and B.. Equally, the regulated company has the opportunity to outperform and thus profit if it can reduce its costs.	The regulator may set a control which is too lax (hurting consumers) or too tough (which may have service quality implications in the near or distant future). Information asymmetry makes it tricky for the regulator to get it right.
<b>D</b>	As for model C, except the funding allowance may be determined by looking at what similar efficient companies require to deliver a similar service.	Should allow for a more robust price control to be set than under model C.	There may be exceptional reasons why one company’s costs differ from another. If not properly taken account of, the regulator may set too tough a control.
<b>E</b>	Costs of a hypothetical new entrant company are considered, and the existing regulated company is allowed funding based on what the hypothetical new entrant would require.	The regulator will naturally assume the new entrant is über efficient, which will put downward pressure on prices.	This approach totally ignores legacy issues as to how and why the existing company’s network developed in the manner it did. It is likely the company would thus be unfairly remunerated using this model.

4.12 The RPI-X framework which is applied to network companies in Northern Ireland is essentially based on the approaches described by models C and D with revenue caps applied to the main network companies. Model D perhaps best describes the situation in water with model C a better description of the practice, to date, in energy. The approach at A however best describes the approach for Mutual Energy where the benefits of low cost capital is judged to more than offset any potential inefficiencies of allowing cost pass-through in

companies which have relative uncomplicated and limited opex and capex expenditures.

- 4.13 Going forward the Utility Regulator proposes continuing broadly with the approach under models C and D, with the intention to move more towards model D in Energy. This however does not preclude the further use of model A in circumstances where low cost financing opportunities arise and where there are benefits for consumers. It also does not preclude consideration of some of the initiatives being considered by GB regulators to build on the RPI-X framework to reflect the changing policy environment described in chapter 3.

<b>Q4. Do respondents agree that the existing ex-ante approach should be retained?</b>
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**Duration**

- 4.14 Under the incentive based RPI-X framework the duration of a price control is an important lever used to control the strength of incentives for a regulated company to reduce its costs. Generally, the longer the duration the stronger the incentive is to reduce costs. However, the longer the duration of the control the greater the potential for allowances (and hence prices) to deviate from actual costs. This can increase risks for both customers and regulated companies.
- 4.15 Duration therefore can have financing implications for regulated companies. Longer-term controls generally give greater certainty and less perceived regulatory risk for investors, which in turn can reduce the cost of finance. However the uncertainty associated with financing costs over a longer timeframe might increase risks and impact on the ability of a company to finance its activities.
- 4.16 Duration also has implications on the resourcing needs of the regulator (and regulated companies). Shorter term controls typically will require fewer inputs but on a more frequent basis when compared to longer term controls.
- 4.17 To date, the Utility Regulator has tended to set control periods for five years for networks. This is consistent with common practice for network regulation in the UK and beyond.
- 4.18 Varying control lengths of one to three years have been applied to NI Water, gas distribution companies (in their early years), retail energy providers, and the electricity market and system operators. These durations were set according to the particular circumstances in each case, which again is broadly consistent with international practice for non-network industries (and/or unique circumstances).
- 4.19 Under its new RIIO framework Ofgem has decided that its network price controls will last for eight years with a narrow mid-term review after four years to adjust outputs where there has been a material change in what is required of network companies. The rationale for this change was to encourage longer

term thinking, underpinning some other changes proposed in the RIIO document including a focus on outputs. It is also aimed at discouraging companies from going for short-term efficiency savings at the expense of long-term efficiency and outputs.

- 4.20 Despite Ofgem's current thinking, the view within the Utility Regulator is to retain our existing practice of setting five year controls for the main networks. For now there is a broad consensus that a period of five years strikes the right balance between providing strong incentives to reduce costs, while not exposing either the company or consumers to prolonged periods of price-cost mismatch. We consider that network companies can still be encouraged to take a longer-term more strategic view without extending a price control period beyond five years. We will however continue to monitor developments at Ofgem.
- 4.21 For smaller non-network price controls we will aim to move to a minimum of three year price controls though this will need to take account of any changing circumstances, particularly in the retail sector and any decisions on the future of PPB.

**Q5. Do respondents agree that the duration of network price controls should be five years with a target of a minimum of 3 years for non-network price controls?**

## CHAPTER 5 – INCENTIVISATION IN PRICE CONTROLS

### Chapter summary

This chapter outlines our proposed approach to incentivisation in price controls. It comprises a discussion on factors which have encouraged a greater emphasis on incentivising outputs as well as efficiency. The objectives for incentive design are also outlined. Incentivisation of outputs is also discussed and the treatment of Opex and capex allowances and incentives are covered. The balance between reputational versus financial incentives are also outlined. The chapter concludes by looking at, respectively, opex and capex efficiency.

### Introduction

- 5.1 Historically, as noted in chapter 2, the main focus of incentivisation has been to encourage cost minimisation subject to certain standards of service being maintained. The focus was therefore largely on what is described as productive efficiency i.e. producing most output from least input. Broadly the aim was to motivate monopoly companies to behave as if they were in competitive markets. This will remain the main focus of incentives in price control for the immediate future. In particular, it will be the focus of the water price controls where comparative benchmarking has shown a considerable gap in efficiency levels between NIW and comparable GB companies. It will also remain a significant element of the incentives framework in energy price controls. This will eliminate any efficiency gaps with comparable GB companies as well as to ensure, going forward continuing productivity gains - where they can be achieved.
- 5.2 We will however also need to put more effort into considering how best to incentivise outputs (and outcomes). As noted earlier, Ofgem - under its RIIO programme - has proposed a series of output categories that network companies need to deliver. Ofwat have also initiated a 'Future Challenges' programme to look at their approach to price controls in the future. Within that programme, they intend to look at incentives and the best ways to encourage the behaviours and outcomes that are needed to achieve their strategic goals. This focus on outcomes, to a large degree, reflects the changing context outlined in Chapter 3 including: new environmental objectives from government, increased uncertainty and the need for greater innovation. The latter is likely to require a greater focus on dynamic efficiency ensuring that regulated companies do not focus on short-term savings while compromising the long-term interests of customers.
- 5.3 It also reflects concern among regulators about the difficulty of separating out incentives which encourage capex efficiencies, for which regulated companies have been rightly rewarded, from those encouraging undesirable capex under-spends (for which companies sometimes have also been rewarded). The latter encourage firms to defer necessary investment leading potentially to adverse effects on service standards in the longer-term and for which customers may be required effectively to pay twice to remedy. Clear rules on our approach to deferred expenditure and better monitoring of companies

including possibly the use of Reporters (see section on capex efficiency in this chapter and chapter 8) will help to address this issue. Over the longer term, incentivising of appropriate outputs may help also to address it without the need for undue regulatory monitoring/resources.

## Objectives for incentive design

5.4 Ideally any cross-utility arrangements designed to incentivise efficiency (both productive and dynamic) should meet the following objectives:

- **sufficient funding:** the company should be allowed to earn sufficient revenue to deliver the required standard of service and outputs;
- **optimum capital investment strategy:** the mechanisms used should incentivise the company to make the optimum capital investment in their infrastructure in line with their long term strategy:
  - they should not be incentivised to spend money on non-essential items;
  - assets should be replaced before the risk of failure becomes unacceptable;
  - asset condition should be at or above the basic acceptable standards at all times (i.e. the incentive mechanism should not reward the company for deferred expenditure).
- **continuous improvement:** the system should incentivise the company to continuously look for and achieve efficiency, while ensuring customers receive an appropriate share of any savings that they fund. Efficiency should be rewarded for a period but the benefits to the company – which is paid for by consumers- should be appropriately time-limited.
- **flexibility:** the mechanisms should allow for flexibility to revise the outputs as circumstances change. This includes the possibility of no payment for outputs that are not delivered by either deferral of spend or because an anticipated need did not arise (e.g. projected demand increases fail to materialise). Additional outputs that are required for example by new legislation should be funded, but only from the date that the legislation becomes active.
- **accurate submissions:** the system should incentivise the company to submit the most accurate information possible and there should be no benefit obtained by inflating submissions.
- **equalisation of incentives:** the mechanisms should not provide an incentive to transfer inappropriately spend between opex and capex during the price control period.

5.5 Designing a set of incentive arrangements which meets all of the above objectives is not easy. There are dangers of introducing undue complexity which in the end can lead to perverse results. There is also a danger of over-emphasising the concept of 'rationale economic man' when designing

incentives and failing to recognise that decisions at the individual and corporate level may well be driven by wider factors.

**Q6: Do respondents agree with the objectives for incentive design outlined above?**

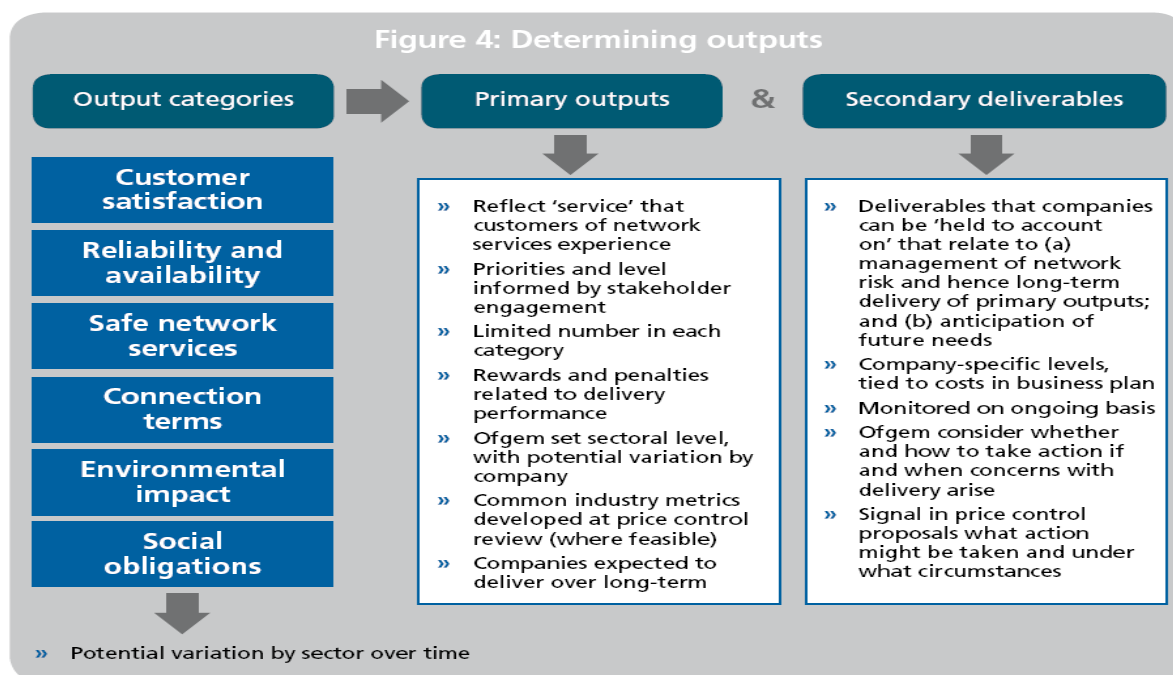
### Outputs and their incentivisation

5.6 In the introduction to this chapter we noted that while incentivisation of productive or cost efficiency remained our key focus we were also aware of a move by regulators in GB to placing more emphasis on defining and incentivising outputs. As noted above, this reflects a changing policy context as well as a means of tackling some of the unwanted behaviours which arise from companies trying to game incentives particularly capex efficiency incentives. This is an approach which the Utility Regulator would also like to proceed.

5.7 Under the RIIO program, Ofgem have proposed a series of output categories that network companies need to deliver. The key points relating to outputs are:

- outputs to be set out in the licence;
- consumers know what they are paying for;
- incentives on network companies to deliver; and
- outputs reflect enhanced engagement with stakeholders.

These are further defined with primary outputs and secondary deliverables as depicted in the diagram below.



Source RIIO: A new way to regulate energy networks- A Final Decision (October 2010) P.

- 5.8 One key point raised by Ofgem in relation to outputs was the need for them to matter to the users of the network, as well as being material, controllable, measurable, comparable, applicable and legally compliant. Ofgem have a concept of having primary and secondary deliverables from their outputs categories. Ofgem propose having a number of primary outputs linked to the delivery within the price control period. They also propose having secondary deliverables to ensure that any incentives put in place do not just have short-term benefits at the expense of the longer-term requirements. However, Ofgem have put the onus on the network companies to propose suitable secondary outputs.
- 5.9 In future, Ofwat's approach could seek to incentivise productive, allocative and dynamic efficiency across each part of the value chain. So far, Ofwat has stated it would seek to do so by incentivising the following:
- (a) efficient targeting of investment and long-term planning;
  - (b) cost efficiency and innovation;
  - (c) efficient use of water (by end users as well as within and between companies);
  - (d) efficient entry;
  - (e) regulated companies to understand and respond to customers;
  - (f) provision of accurate information by regulated companies to allow Ofwat to set price limits;
  - (g) regulated companies to take responsibility for their businesses and manage relationships with stakeholders;
  - (h) achieving sustainable water and sewerage sectors.
- 5.10 Ofwat has also initiated a 'Future Challenges' program to look at the approach to price controls in the future. Within the program it intends to look at 'Incentives – what are the best ways to encourage the behaviour and outcomes that we need to achieve our strategic goals?' More specifically, they intend to consider how they should specify outputs in price controls.
- 5.11 The majority of the concepts used by Ofgem and Ofwat are relevant to Northern Ireland. However, the output categories we define should be aligned with the overall strategy for regulation in Northern Ireland. In the Utility Regulator Corporate Strategy 2009-14<sup>6</sup>, the following strategic themes were identified.
1. Protecting consumers by ensuring utility monopolies act efficiently
  2. Environmental sustainability and security of supply
  3. Protecting vulnerable consumers
  4. Boosting competition in wholesale and retail sectors

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<sup>6</sup> [http://www.uregni.gov.uk/uploads/publications/Corporate\\_Strategy\\_2009-14.pdf](http://www.uregni.gov.uk/uploads/publications/Corporate_Strategy_2009-14.pdf)



- 5. Harmonising energy markets and use of infrastructure
- 6. Evolving our Regulator Framework
- 7. Our own Organisational development.

5.12 A subset of these themes could be considered for any price control being set by the Utility Regulator:

- protecting consumers by ensuring utility monopolies act efficiently
- environmental sustainability and security of supply
- protecting vulnerable consumers

Electricity and Gas Price Controls should also consider:

- Harmonising energy markets and use of infrastructure

5.13 The output categories adopted by Ofgem are equally applicable for Northern Ireland Utilities. These have been aligned with the Utility Regulator strategic themes in the table below:

Utility Regulator Strategic Theme	Output Categories
Protecting consumers by ensuring utility monopolies act efficiently	Customer Satisfaction
	Reliability and Availability
	Safe Network Services
	Connection terms
Environmental sustainability and security of supply	Environmental Impact
Protecting vulnerable consumers	Social Obligations

5.14 All six categories are applicable to the three network utilities companies we regulate, although to differing extents. The scale of the incentive mechanism should reflect this.

5.15 In defining incentives for future price controls, the first question that should be asked is what outputs do consumers want. Under PC10, the water directorate invested a lot of time in stakeholder engagement and used the communication flow to influence a set of outputs, based on an Overall Performance Assessment (OPA) that are now included in the PC10 Price control (these are listed in Annex 2). Additionally, the water team’s annual Cost and Performance Report identifies NI Water’s progress in meeting improved OPA scores and PC10 included an anticipated OPA score total over the life of the price control. This is a key element in setting reputational incentives for NI Water within the PC10 regulatory contract.

- 5.16 There are elements of output based incentives in place in electricity. The Guarantee of Standards includes regulated Standards of Performance, where penalties apply for underperformance. It is worth noting that NIE T and D have used these as a positive signal to consumers in their published accounts which suggests that these also act as reputational incentives. Guaranteed Standards are also being developed for the gas industry and the initial work on consumer research to inform these has already been undertaken by water. At the present time, water customers are presented with certain company promises on the customer service package as part of NI Water's Codes of Practice.
- 5.17 It is proposed therefore that energy (particularly electricity) should follow water and start to develop appropriate outputs which are linked clearly to allowed revenue and price control objectives (some work has already commenced for capex in RP5). We propose that outputs should be linked to relevant Utility Regulator strategic themes. In the first instance these will be monitored and published with adverse reputation being the main incentive. Over time we will consider moving towards a stronger link between output delivery and rate of return on equity. As part of this exercise we will develop a common approach to categorising outputs distinguishing between intermediate outputs (activities), final outputs and outcomes.

**Q7. Do respondents agree that the Utility Regulator should:**

- **develop outputs for energy similar to that done for water;**
- **link such outputs to our strategic themes; and**
- **incentivise initially with reputational incentives with the possibility of financial incentivisation in the longer-term?**

**Opex and capex – separation of allowances and incentives**

- 5.18 To date, the Utility Regulator has calculated separate opex and capex allowances and applied incentives separately to each. One of the criticisms of this approach has been that it encourages a capex bias by regulated companies. Such a bias causes a number of concerns. It can lead to inefficient and ultimately more costly solutions. It can, where capex allowances include significant elements of capitalised opex with little operational risk, lead to a higher than necessary rate of return on capital. This capex bias has been seen as arising for a number of reasons, including:
- managing operational risk- capex once spent and incorporated into the RAB can be guaranteed for years whereas opex if deemed to be inefficient or ineffective is likely to be cut by regulators. Where such operational risks exist companies may be encouraged to promote more capital intensive solutions even if they are not as efficient or cost effective as less capital intensive approaches.

- cultural factors- sometimes in firms there may be an ‘engineering’ bias which encourages capex rather than opex solutions. Finance directors also sometimes like to ‘win’ investment for their part of the company which may be further encouraged by tax rules. The notion that shareholder value is primarily measured by the RAB may also encourage companies towards capex growth.
- Unequal incentives – if incentives on opex exceed incentives on capex this may further encourage less efficient capex solutions as well as over-reward companies for out-performance.
- Unequal bench marking – where benchmarking of opex is more prevalent than benchmarking of capex there may be an incentive to capitalise opex to meet the more demanding opex benchmarks.

5.19 Regulators have attempted to address this bias in a number of ways, including:

- equalisation of incentives between opex and capex;
- totex benchmarking;
- close scrutiny of opex and capex allocations with regulatory accounting rules.

5.20 Ofgem in DPCR5 have introduced changes aimed at equalising incentives with the objective of removing distortions between capex and opex decisions. This has involved applying its Information Quality Incentive (a form of menu regulation) which previously applied only to capex also to opex and applying identical percentage shares to out- and under-performance. Essentially it involves applying a single incentive to a company’s cash allowance for the price control period. Incentives are therefore applied to aggregate over-or under performance with the composition of expenditure irrelevant.

5.21 Analysis by First Economics for the UKWIR Group challenges this approach suggesting that incentive equalisation for opex and capex by Ofgem has been more apparent than real. It suggests that the Ofgem approach to equalising incentives works well if the implications of the expenditure decisions are confined within one control period. For recurring expenditure, which opex typically is, incentive distortions remain with benefits to companies resulting from opex savings being much lower than on capex. The implications from the analysis are that the recurring nature of opex requires more powerful incentivisation of opex (compared to capex) which is removed by moves towards a simplistic ‘equalisation’ approach.

5.22 Totex benchmarking has been used by a number of GB regulators with Ofgem perhaps putting most into its development. The purpose has been to address the issue of capital bias. It has involved both a top-down approach with the application of a single regression for all expenditure (using data for eight networks over three years). Complementing it has been a bottom-up approach

with three separate regressions for opex, repex (replacement capex) and capex. Key issues to be addressed in the exercise have been expenditure coverage, the smoothing of lumpy capital expenditure and model specification. This may be a useful approach for the Utility Regulator to consider over the longer-term. In the meantime we intend to put greater resources into benchmarking of both opex and capex in both gas and electricity where there remains an absence of hard evidence that local network providers are as efficient as their counterparts within their respective industries. We will however remain cognisant of the dangers of encouraging capitalisation of opex in situations where benchmarking opex is given greater weight.

- 5.23 Regulators have also tried to address the issue of capex bias and gaming of incentives by close scrutiny of opex and capex allocations and applying, on a consistent basis, regulatory accounting rules. This is the area where the Utility Regulator sees the greatest potential for immediate application. It is consistent with our efforts to introduce more effective annual monitoring of expenditure in both electricity and gas along the lines already in place for water.
- 5.24 To conclude, the Utility Regulator will continue to agree separate opex and capex allowances with companies. In doing so we will aim to minimise the incentives and opportunities for companies to game incentives and to produce inefficient allocation of resources between opex and capex. We do not intend to introduce the equalisation of incentives approach proposed by Ofgem. We note the UKWIR work on equalisation of incentives and will consider further the implications of the report's findings when designing any incentive arrangements aimed at improvements in this area. We will not at this stage introduce totex benchmarking.
- 5.25 We will, in the first instance, develop the more comprehensive approaches to opex benchmarking used in water to electricity and gas. We will also introduce, on a consistent basis across electricity, water and gas, an agreed approach to regulatory accounting rules for the allocation of expenditure between opex and capex. This will be developed along with more effective monitoring arrangements for gas and electricity similar to that already developed for water. We will also ensure that the cost of capital does not over-reward the actual risks which companies face (see chapter 7), thereby helping to avoid any capex bias. We will also where we consider that companies have unduly capitalised opex make appropriate adjustments to the RAB.

**Q8 .Do respondents agree with the Utility Regulator's proposal to continue to separate opex and capex allowance and incentives?**

**Q9. Do you agree with our proposed approach to minimising bias towards capital expenditure?**

## Reputational versus financial incentives

- 5.26 Financial incentives reward or penalise firms depending on their performance relative to target benchmarks. Under the RPI-X regime financial incentives have been focussed on incentivising efficiency. Companies which have reduced their costs below an agreed target benchmark have been allowed to retain some or all of the savings for an agreed period. Conversely where they have exceeded an agreed benchmark they have borne some or all of the additional costs.
- 5.27 Financial incentives can also be used to incentivise desired behaviours and outputs by regulated companies. In such instances financial incentives allow revenue adjustments to be made in line with network company performance in delivering agreed behaviours or outputs over a price control period. As with efficiency incentives companies which achieve or exceed their output targets tend to achieve or exceed their WACC (and hence a greater rate of return on equity) whereas underachieving companies get a return below their WACC.
- 5.28 In the RIIO documentation, Ofgem proposed using financial incentives with respect to outputs under the following circumstances:
- there is clarity on the primary outputs to be delivered;
  - there is confidence in the data used to measure performance;
  - the output is considered to be important; and
  - there are not already incentives in place on the network company through other schemes or obligations.

Applying the above criteria, Ofgem argue, will allow financial incentives to be designed that are measurable and provide transparency on the treatment that will apply in the event of successful delivery/non-delivery.

- 5.29 One key point in the above list that will need to be given greater emphasis in the future is linking financial incentives to the needs of stakeholders. Ofgem are intending to engage stakeholders more in order to provide an indication of the importance they place on outputs and this will help to ensure that incentives are aligned with value for money as far as possible.
- 5.30 Reputational incentives are non-financial incentives that leverage off the value companies place on establishing or maintaining a good track record for delivery with their stakeholders. They will usually involve the measurement of network company performance which will then be publicised to groups of interested stakeholders. Reputational incentives can be combined with financial incentives or can be considered in isolation. Reputational incentives will only be successful if regulated firms place importance on outperforming other companies and value their brand and reputation. For such companies regulators can instil a level of reputational risk via benchmarking to similar companies.

- 5.31 In the RIIO documentation, Ofgem suggest that reputational incentives are likely to be of most use where:
- there are comparator companies, as this can facilitate competitive pressures; or
  - it is possible to monitor and compare the performance of individual network companies over time to determine improvements/ deteriorations in performance.
- 5.32 Europe Economics, in a paper produced for Ofwat in 2010 (Future Price Limits – Risks and Incentives: Options Appraisal), have suggested that reputational impacts may provide a regulated firm with particularly strong incentives - if performance has been significantly below standard. This suggests that they may have an important contribution in the regulation of NI Water where there is a significant efficiency gap with GB and where the ownership structure may be less conducive to financial incentivisation.
- 5.33 Europe Economics also note that a potential drawback of mechanisms that provide reputational incentives rather than financial incentives is that they may generate unrealistic expectations among consumers (to the extent that they pay attention to the relative ranking of firms) without taking into account the cost of improving performance.
- 5.34 Reputational incentives may be of particular importance in the Northern Ireland context bearing in mind the level of political scrutiny of local utilities. This has certainly been the case with respect to water. Similarly, the ownership of the electricity network by ESB is likely to increase political scrutiny. Though it is interesting to note that NIE plc have always put a lot of emphasis on their performance, as is detailed in their annual report and accounts. While the context is rather different, Phoenix Gas also regards reputation as key in terms of growing their business where the competition has been both from other fuels as well as benchmark comparisons with firmus. In any transition requiring network companies to put more emphasis on the delivery of outputs, there may be value initially in using reputational incentives with a move, if necessary, to financial incentives in the longer run.
- 5.35 To conclude, the Utility Regulator proposes to continue using financial incentives as the primary incentive to achieve greater efficiency. It will also continue to use reputational incentives to encourage greater efficiencies in water; this reflects the well-documented significant efficiency gap compared to similar companies in GB and the public interest in its relative performance. In the first instance we will use reputational incentives to encourage desired outputs and behaviours but will consider applying financial incentives. This will ultimately impact on the rate of return on capital employed, as work on outputs becomes better developed.

**Q10. Do respondents agree that financial incentives remain the primary focus for encouraging efficiency?**

**Q11. Do you agree that reputational incentives remain an important component of efficiency incentives for water?**

**Q12. Do you agree that reputational incentives should be used initially for incentivising outputs in all sectors with the use of financial incentives considered as work on outputs becomes better developed?**

### **Degree of symmetry for incentives**

- 5.36 As discussed in the Europe Economics paper, there does not appear to be a regulatory consensus as to whether symmetric or asymmetric incentives work better. Some regulators have opted for symmetric schemes; others have opted for asymmetric schemes with larger rewards, whilst other regulators have opted for larger penalties.
- 5.37 The degree of symmetry of incentives is very dependent on the relevant circumstances. One factor may be the attitudes of customers and stakeholders. For example, if the key concern - with respect to service standards - is about a fall in standards there may be more emphasis in an incentive scheme. This may work on the basis of large penalties for poor performance with limited rewards for improvements in performance.
- 5.38 A further point of consideration raised in the Europe Economics paper was in relation to insights from behavioural economics in assessing how companies respond to incentives. Behavioural economics goes beyond the utility maximising assumption and draws on insights from other disciplines such as psychology. An example is the observed phenomenon of 'loss aversion' with more weight given to avoiding a loss than to achieving a gain of a similar size. This can be relevant to the design of incentives. It may be appropriate to allow firms to retain more of the savings if costs are below target than they are required to bear if costs are above target, since loss aversion will itself provide an incentive to avoid any overrun.
- 5.39 Ofgem under their RIIO model have taken a symmetrical approach to efficiency incentives. The incentive is upfront and is combined with no discretionary adjustments (except in very exceptional circumstances where it can be demonstrated that a network company has wasted money) for over- and under-spends. A key requirement for such an approach is the setting of outputs with rewards and penalties linked to achieving those outputs. In the absence of such an approach on outputs there remains need to take a more flexible approach to the balance between rewards and penalties. At best the default position might be equality of incentivisation with adjustments if factors noted above suggest moving from this position. Maintaining a symmetrical approach is likely to depend on an

assessment of the company's response to incentivisation. Where there is for example 'satisfying' behaviour identified in companies there may be a need to move from a symmetrical position and ensure that under-performance is penalised more harshly than would occur with a symmetrical approach.

**Q13. Do respondents agree that while incentive symmetry may be a useful starting point any decisions will depend on a range of considerations including customer and stakeholder attitudes and behavioural responses of regulated companies?**

### Opex efficiency

5.40 To date opex efficiency in network companies has been based on a mechanism where the full value of out-performance has, in most instances, been retained by the company for the period of the price control. Conversely, when costs have been exceeded the additional costs have usually been met by the company for the duration of the price control.

### Scope for efficiency incentives

5.41 The scope for efficiency and hence potential effectiveness of incentives can differ between different types of spend. This can be a result of a number of factors, including:

- **frequency of the activity:** the more frequently the company undertakes the activity the more opportunity it has to improve its ways of working;
- **preparation time:** the longer in advance the company knows that it will have to undertake an activity the greater the likelihood that it will be done efficiently;
- **degree of flexibility:** the greater the flexibility that the company can utilise in its approach to the activity, the more scope there is for innovation and efficient delivery.

5.42 On the basis of the degree of predictability and controllability four categories of cost can be identified.

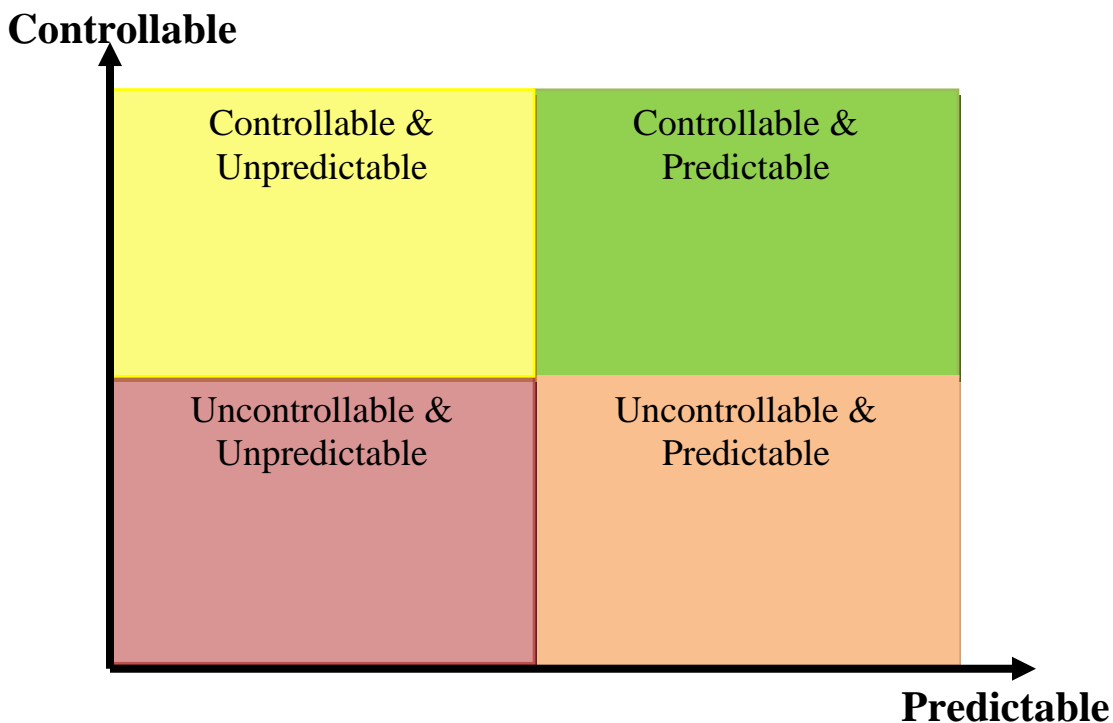
- **controllable:** These are costs where the company has some influence over the total amount that they pay. This includes options to negotiate the unit price, to alter the quantity required, substitute with an alternative or use hedges to avoid cost shocks. Examples of this include rates (reduce quantity), cost of metal components (use of hedges), design services (negotiate on price), and network configuration (substitution).
- **uncontrollable:** These are costs which are mandatory and where the company cannot influence the amount charged and the quantity required. An example of this is licence fees, which are mandatory and where the Utility Regulator determines the amount to be paid. (Note: for companies where the



licence fee formula includes a reference to the volume that can be supplied / produced, the company can choose to vary this volume and so it becomes a controllable cost).

- **predictable:** These are items that the company know that they should deliver / or costs that are certain to arise during the duration of the price control. However, the actual cost may not be known. Examples of this are rates bills, electricity costs for pumping water, replacement of end of life assets, chemicals for water treatment, capital upgrades due to recent legislation and payroll.
- **unpredictable:** These are items where the need for the spend (or the detailed outputs) cannot be foreseen at the time of the price control determination. Once they are known the company may or may not have flexibility in the method of response and the costs associated with the event. Examples of this are new connections to the network and changes to legislation during a price control.

These result in a matrix that can be used to group together costs under four headings. Incentivisation techniques can then be tailored to each of the four categories.



- 5.43 Incentivisation is likely to be most effective for two of the four categories: (a) controllable and predictable and (b) controllable and unpredictable.

(a) Controllable and Predictable

This is the category of spend where the company has the most opportunity to improve efficiency. It includes all routine activities and the company has complete flexibility in how it achieves the service outcomes required of it. Due to the predictable and repetitive nature of these activities, the company also has time to assess alternative methods of delivery. This is the largest area of spend within most companies and is the area with the most scope for innovation and productivity improvements.

(b) Controllable and unpredictable

The company has less opportunity to prepare in advance for activities and costs within this category, but still has some scope for choice in its response. For example, the company may not be able to foresee changes in legislation at the time of a price control submission, but it will have a certain amount of time to adapt to the new standards and will have scope for identifying synergies with other tasks. They will also have the opportunity to innovate in their chosen solutions.

While this is a smaller area of spend, the company still can make choices that affect the total costs that it incurs. Therefore, while the cost cannot be included within the price control, the company can be challenged to ensure that customers receive benefit from efficiency if they are underwriting the risk of any failures as a result of innovation. The treatment of these costs in the price control process will be considered in chapter 7 dealing with risk and uncertainty.

- 5.44 The remaining two categories (c) Uncontrollable and predictable and (d) uncontrollable and unpredictable allow little scope for incentivisation. Again treatment of both these categories in the price control process are also dealt with in chapter 7.

(c) Uncontrollable and Predictable

In this category the company does not have any significant opportunity to innovate or improve productivity in response to the cost driver, however they can predict that the cost will be incurred, so it can be included within the scope of a price control. These costs can be included with the opex allowance specified by the price control, but the company has little opportunity to make efficiency savings in this area. Where however a company has scope to reduce demand in a situation of increasing (uncontrollable) prices there may be an argument for putting such costs into category (a). This will require a judgement on the scope for controlling volumes/quantity relative to the impact of uncontrollable prices.

(d) Uncontrollable and unpredictable

The company has no scope for innovating or improving efficiency for costs within this category.

- 5.45 In conclusion it is proposed that going forward opex expenditure will be split into the four categories outlined above with incentives focussed on (a) and (b). Categories (c) and (d) are expected to have little scope for incentivisation and their costs will be subject to the risk mitigation measures discussed in chapter 7.

**Q14. Do respondents agree with the categorisation of opex above and the proposals to focus incentivisation on the controllable categories (predictable and unpredictable)?**

**Opex- rolling versus fixed efficiency incentives**

- 5.46 Traditional fixed incentive regimes which have been the norm in Northern Ireland only allow a company to retain the benefits of efficiency savings for the duration of the price control. This tends to act as a disincentive for companies to identify innovations/savings as the price control period progresses, as the duration for which the savings can be retained is reduced, and the potential relevance to the baseline estimate in the subsequent price control increases. To encourage companies to reveal cost savings the rolling mechanism which allows a firm to keep any savings for a fixed time period irrespective of when the savings are made has been proposed.
- 5.47 Typically the period for which savings are retained has been 5 years –the duration of the price control. The potential plus side for customers is that companies will be incentivised to undertake all projects with a payback up to five years, at the earliest opportunity. It is therefore considered that a rolling incentive approach is preferable to the traditional fixed review period approach. This approach has been implemented by several GB regulators. It is proposed that going forward, this approach will be adopted by the Utility Regulator for all its price controls. This approach will only apply to out-performance. Where a company over-spends the penalty will apply only for the price control period. The extent to which opex baseline in next price control will incorporate any such additional costs will depend on the case put forward by the company in its price control submission - incorporation of such costs will not be automatic. This asymmetry of approach recognises the need to incentivise regulated monopolies to reveal opex efficiencies which can potentially benefit consumers for many years to come. In contrast, if a company exceeds its allowed revenue it is not only penalised within the price control period but has no guarantee of maintaining that increased expenditure going forward if it is judged by the regulator to be an inefficient spend.

**Q15 Do respondents agree with our proposal to introduce rolling opex incentives for opex out-performance?**

**Capex efficiency**

**(a) objectives for efficiency incentives**

5.48 The amount of depreciation that is passed on to customers in their tariffs is determined by the price control capex allowance. Customers also pay the company a rate of return on that asset base. When determining how the additions to the regulated asset base are calculated, the Utility Regulator should encourage:

- sufficient finance for the company;
- the delivery of a network of the required capacity and quality; and
- a capital plan that fits in with the workload expected during the subsequent period.

It also must be careful to avoid encouraging:

- the construction of “white elephants” or over designed assets;
- investments that increase opex inappropriately during subsequent price controls;
- investments or innovations that increase losses (for unbundled companies);
- lumpy investment which causes supply chain bottlenecks; and
- opportunities for parent companies to under-invest and then sell on the network to another company (exposing customers to risk).

**(b) Incentivising capex efficiency**

5.49 If capex efficiency was incentivised in a similar fashion to the approach for opex proposed above, capex revenue would be determined prior to the price control. If the company under-spent in the control period it would retain all or some percentage of the savings (depreciation and rate of return) for the price control. Similarly with overspends it would incur all or some percentage of the extra costs for the duration of the price control.

5.50 In its simplest form, this approach can create perverse incentives to defer often necessary expenditure or produce less cost-effective solutions with greater costs imposed on customers in the longer-term. On the other hand, similar to opex incentives, it can encourage firms to produce innovative and cheaper solutions and have more efficient procurement practices. Ideally a good incentive regime would discourage the former and encourage the latter.

5.51 Examples of positive effects of such an incentive regime are:

- volume decreases due to better/more innovative asset management techniques;
- unit cost decreases due to more efficient and effective procurement practices; and
- encouraging firms not to exceed allowed revenues either by poor forecasting when making price control submissions and/or poor project management leading to upward cost drift.

5.52 Such a regime can however have potential undesirable effects :

- **deferred Capex:** There is an incentive to game the incentive regime by deferring capex even if it leads to poorer service/higher costs for customers in the longer-term.
- **inefficient Solutions:** There may be an incentive to produce inefficient solutions e.g. using cheaper products/techniques even if they lead to higher costs/poorer service in the longer-term.
- **inaccurate submissions:** There is an incentive on the company in making submissions to inflate costs.
- **discouraging Innovation:** Innovative solutions which have significant up-front investment costs but lower costs and/or improved outputs in the longer - term may be discouraged or delayed if companies are not compensated for cost incurred above their allowed revenue.

5.53 In principle, these undesirable effects can also apply when this incentive regime is applied to opex and where they arise the Utility Regulator will wish to act to protect consumers. Opex and capex expenditure however tend to be different character; opex tends to be more continuous and less volatile than capex which is more lumpy or one-off. Opex reductions in one period will tend to have implications for allowed revenue decisions by the regulator in future periods and this makes opex reductions which do not reflect genuine efficiency savings less attractive to companies. The more discrete nature of capex makes it more difficult for the regulator to capture efficiencies for future periods and therefore makes the gaming of incentives easier and more attractive for companies. Companies can also alter volumes more easily for capex than opex, thereby potentially gaining from under-spends. Some of problems may be less applicable to replacement capex (repex) which is closer to opex in character. This suggests a need to identify separately repex from other more discrete types of capex with separate approaches to incentives and the monitoring of expenditure and outputs.

## Deferred capex

5.54 Discouraging firms from achieving the benefits of under-spends by deferring capex can be tackled directly by identifying capex deferrals (adjusted for any

substitution of projects) and disallowing any related depreciation and cost of capital allowances. This approach has been proposed for the current Phoenix Natural Gas price control. Such an approach allows the company to continue to retain any genuine efficiency gains. It may be less useful in a situation where it remains difficult to distinguish under-spends which reflect efficiency from those which reflect deferred capex with potential down sides for network performance at a later date. The process is likely to be assisted by an effective regime for annual monitoring of expenditure which again has been introduced by the Gas Directorate. It appears to be most easily applicable to capex which covers discrete projects. It may be less easy to apply to repex but again effective annual monitoring may also assist in identifying under-spends which are not genuine efficiency improvements. The use of a Reporter (as is currently done in water) may also assist. All of these approaches can however be quite resource and data intensive.

5.55 In the last electricity networks price control, there was an attempt to address the problem of deferred capex by what was considered a less resource- intensive approach. Under this approach only actual spend was added to the RAB. At the outset of the price control an estimated allowed expenditure was identified as normal. There were however no rewards or penalties for volume/activity changes from those implied in those estimated allowed revenues. A separate mechanism was devised to identify any unit cost efficiencies in outturn versus this original allowed expenditure and a sharing mechanism was applied. It is interesting to note that the efficiencies achieved by the company using this mechanism were quite small. While this mechanism has been successful in preventing unjust rewards for deferred capex it has had a number of deficiencies:

- there has been considerable upward pressure on expenditure (with no corresponding increase in volumes) with the customer bearing the cost of potential inefficiencies/forecasting errors;
- considerable extra regulatory scrutiny has been required ;
- there has been an incentive on the company to capitalise opex and achieve out-performance payments on opex which may not reflect genuine efficiencies.

5.56 In the longer-term a comprehensive outputs regime with rate of return on equity (RORE) linked to delivery of these outputs (along the lines proposed earlier in this chapter) is likely to address the deferred capex issue in a less resources intensive way - though it is unlikely to mean the end entirely of the approaches suggested in para 5.54. The actual spend approach used in the last T and D price control is not considered a satisfactory approach going forward.

## **Inefficient solutions**

5.57 As for deferred capex, the problem of inefficient solutions is likely to be best addressed by a regime of well established outputs linked to the return on equity. While companies may make gains temporarily through under-spends which are not genuine efficiencies, they will be penalised in the longer-term by lower returns on equity if agreed outputs are not achieved. In the short-term annual monitoring returns and the use of a Reporter may assist the regulator in identifying or preventing the more obvious examples of this type of gaming.

## **Inaccurate submissions**

5.58 An incentive regime which rewards under -spends and penalises over-spends gives companies a strong incentive not to provide accurate price control submissions and to inflate cost and volume estimates. The asymmetry of information between the regulator and companies will always give the company an advantage. This will continue to persist following the introduction of an effective output/RORE regime. The use of a comprehensive annual monitoring regime and a Reporter can help to reduce the problems of information asymmetry.

5.59 In GB Menu regulation has been introduced by Ofgem (Information Quality Incentive) and Ofwat (Capex Incentive Scheme) specifically to tackle the issue of information asymmetry particularly with respect to capex expenditure. Menu regulation requires the regulator to produce a matrix of settlement options to the company, designed to ensure the company will receive the maximum benefit by choosing the option that is closest to their own expectations of the costs that they will incur. As with a conventional price control, the regulator still is required to make a judgment on the amount of revenue it believes that the company requires. Making well-founded assessments of allowed revenue is an area which still requires considerable development within the Utility Regulator particularly for energy companies. Until more progress is made in this area menu regulation may be of limited value. It is also likely to be most effective for regulators such as Ofgem and Ofwat which are regulating multiple companies which again limits its value to the Utility Regulator.

## **Discouraging innovation**

5.60 A price control which rewards under-spends and penalises over-spends may discourage a company from bringing forward innovative solutions. This may cause it to over-spend its allowed revenue in the current price control even if this reduces costs or improves its ability to achieve outputs in the longer-term. A regime which rewards outputs will help to mitigate this effect. Encouraging a more strategic and long-term approach may also help by introducing better quality business plans in the first place. A longer price control may also help but

only with an output/RORE in place; in its absence it will act to increase the cost to a company of early introduction of innovations. A risk-mitigation approach which did not penalise firms in such circumstances may also be useful in the absence of an output/RORE regime.

5.61 Outlined below in tabular form is a summary of the above discussion.

	Deferred capex	Inefficient solutions	Inaccurate submissions	Discouraging innovation
Outputs/RORE	***	***		**
Robust Deferral Regime	***			
Capex as spent	*			
Annual Monitoring	**	*	**	
Reporter	**	*	**	
Longer Price Controls				*
Menu Regulation			*	
Strategic Business Plans				*
Risk Mitigation				*

\*\*\* Strong Impact  
\* Modest Impact

5.62 The analysis above suggests that moving towards outputs-based regime, with a direct link between equity return and achievement of outputs in the longer-term, will be particularly effective in mitigating a number of the potential perverse effects of applying to capex the standard incentive regime for opex. A robust regime for identifying deferred capex should complement this and will be especially important in the absence of an output/RORE regime. Detailed annual reporting should assist in identifying deferred capex as well as inefficient solutions and inaccurate submissions. The use of a Reporter may also be useful (see chapter 8 for more details). Encouragement of longer-term strategic business plans and appropriate risk mitigation may be useful in addressing the discouraging innovation issue.

5.63 It is proposed therefore to apply to capex incentive arrangements similar to those proposed for opex earlier in this chapter. The timing of the introduction will however be subject to satisfactory implementation of arrangements for deferred capex, annual monitoring and the introduction of a Reporter in energy. It is proposed however that there will be separate approaches to the treatment of replacement opex (repex) and other capex.



5.64 Rolling mechanisms similar to those proposed for opex will be introduced for replacement capex where it can be separately identified. For other capex, rewards and penalties will be confined to within the price control period. Again, introduction of both of these will be subject to effective mechanism for deferred capex being introduced. In the absence of an outputs/RORE regime consideration will also be given to allowing companies to bring forward without (overspend) penalties innovative capex projects (not identified at the outset of the price control) which are judged to produce longer-term benefits to customers. There would however be a presumption against inclusion of such additional expenditure within the current price control and therefore a high hurdle to gain acceptance.

**Q16. Do respondents agree with the above proposal for capex incentivisation including:**

- introduction in the longer-term an outputs regime linked to rate of return on equity;
- a robust regime for identifying capex deferral to include potentially annual monitoring of delivery of capex and use of a Reporter in gas and electricity;
- separate incentive arrangement for replacement capex (repex) and other capex;
- the introduction of a rolling mechanism (similar to opex)for repex out-performance;
- for other capex, an incentive regime where rewards and penalties for over- and under-performance are confined to within the price control period; and
- consideration of a pass-through mechanism for cost- saving innovations

## CHAPTER 6 – COST OF CAPITAL AND FINANCEABILITY

### Chapter summary

This chapter looks at a number of issues dealing with cost of capital and financeability. In particular, the chapter sets out to establish clarity on the cost of capital. The approach to macroeconomic and company specific components of the WACC and extent to which we should follow GB regulatory precedent. The latter part of the chapter discusses approaches to financeability, embedded debt and the small company premium.

### Approach to cost of capital

- 6.1 The cost of capital allowed by a regulator in setting price limits should reflect the opportunity cost of the funds invested in assets. It represents the rate of return that an investor would be likely to require in order to invest in a company, given its risk profile compared with other potential investments. It can also be thought of as the discount rate which an investor would use in evaluating the income stream to be expected from investing in the company.
- 6.2 The cost of capital is a weighted average of two components: the cost of equity ( $K_e$ ); and the cost of debt ( $K_d$ ), where the weightings (gearing or  $g$ ) reflect the relative importance of each type of financing in a firm's capital structure.

$$WACC = K_d \cdot g + K_e \cdot (1 - g)$$

- 6.3 The cost of debt measures the combination of interest rates charged by banks to the company and the return paid by the company on any corporate bonds or other loan instruments issued. It is standard practice to think of this as being made up of a risk-free component and a company-specific risk premium.
- 6.4 The cost of equity, by contrast, cannot be directly observed and therefore needs to be modelled to reflect the returns that a shareholder would expect to demand in exchange for holding shares in the company. The primary tool that is used in analysis of the required return is the CAPM.

#### CAPM Approach

- 6.5 The capital asset pricing model (CAPM) is used to determine the cost of equity,  $K_e$ , applying the following equation:

$$K_e = R_f + \beta_e \cdot (R_m - R_f)$$

- 6.6  $R_f$  is the return on a risk-free asset, usually proxied by a measure of the rate on medium to long-term UK government bonds.  $\beta_e$  is the correlation between the risk in company returns and those of the market as a whole, which can be

estimated from primary market data for listed companies, or by analysing the betas of comparators for companies which are not listed.  $R_m$  is the market-risk premium over the risk-free rate, an UK economy-wide parameter. Conceptually, the market includes all assets. In practice, however, it is generally assumed that a broad equity market-base index is a good proxy. Thus, estimates of the equity risk premium are used as a proxy in estimating  $R_m$ .

- 6.7 Thus in the standard CAPM there are three determinants of the expected return on any asset: the return on a riskless asset - the market premium over that riskless rate that is earned by investors as a whole, reflecting systematic risk; and the particular company's exposure to systematic risk. Company specific risks do not enter the cost of capital in the CAPM model, as they can, by definition, be diversified away by investors.
- 6.8 Academic debate remains as to whether CAPM is an appropriate basis to estimate the cost of equity. Alternatives which have been suggested are:
- the dividend growth model(DGM);
  - the Fama-French three factor model; and
  - models based on the arbitrage pricing theory.
- 6.9 Further details on these models have been included in Annex 3. While the academic debate continues a broad consensus has built up among GB regulators that significant emphasis should be placed on CAPM but that reality checks should be made including evidence from other models including DGM. This remains the position of the Utility Regulator.

<p><b>Q 17. Do respondents agree that, when calculating the cost of capital, the Utility Regulator should continue to depend primarily on the CAPM approach? Do respondents have any views on alternative approaches?</b></p>
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### **Approach to measuring key components of the WACC and role of GB precedents**

- 6.10 The two equations from the section above show that cost of capital calculations are based on estimates of five parameters:
- Risk Free Rate ( $R_f$ );
  - Cost of Debt ( $K_d$ );
  - Expected return on market portfolio ( $R_m$ )
  - Equity beta ( $\beta_e$ ).
  - Gearing ( $g$ );

## Risk-Free Rate ( $R_f$ )

- 6.11 The risk-free rate (RFR) is the rate of return that can be earned on a risk-free investment, i.e. an investment that guarantees a fixed return, with no possibility whatsoever of any variation in the level of return. While there are no investments that are absolutely risk-free, it is conventional practice to determine the RFR by examining the yield on “safe”, liquid financial instruments that are considered to have negligible default risk. To determine the nominal RFR the yields on conventional treasury bills and government bonds are normally used, whilst the real RFR can be measured using index-linked UK government bonds (ILGs), if these are available.
- 6.12 When estimating the risk-free rate it is important to avoid reliance on rates that have prevailed only for a short period of time and that might be driven significantly by the dynamics of the specific market for that instrument. It is therefore normally appropriate to consider medium and long term averages.

## Cost of Debt ( $K_d$ )

- 6.13 The cost of debt measures the combination of interest rates charged by banks to the company and the return paid by the company on any corporate bonds or other loan instruments issued. It is standard practice to think of this as being made up of a risk-free component and a company-specific risk premium.
- 6.14 Since payments on debt are generally fixed (in contrast to the variable returns on equity), “risk” in this context principally means the risk of non-payment. One potential measure of the risk of non-payment is the rating on the company’s debt, provided by ratings agencies. Thus, one way to calculate a company’s debt premium is to consider the rating(s) of its debt and then take market data on spreads on bonds with this rating. For companies which do not have listed bonds and which are not rated, one can make a reasonable assumption about the rating that they might have were they to be rated, based on other similar companies.

## Expected return on market portfolio ( $R_m$ )

- 6.15 The market return  $R_m$  represents the rate investors expect to receive. It is higher than the risk free rate to compensate for the additional systematic risk associated with investing in equities instead of investing in risk free assets.
- 6.16 Regulators have primarily considered three main sources of data for the  $R_m$  - regulatory precedents, third party estimates and surveys. Most regulatory decisions have put more weight on ex-post estimates (i.e. estimates based on historic data) than on ex-ante estimates (i.e. estimates based on forward-looking expectations). In calculating ex-post estimates regulators have tended to rely on long-term calculations.

## Equity beta ( $\beta_e$ )

- 6.17 A firm's equity beta is a measure of the riskiness of a firm – or more specifically, a measure of the systematic risk that a firm presents – relative to the market portfolio. Firms that exhibit a beta of more than 1 can be considered more risky than the average firm in the portfolio and need to pay their investors a higher-than-average return. Firms with a beta of less than 1 are less risky and warrant lower returns. Finally, firms with a beta of exactly 1 are seen by investors as being of equal risk to the market portfolio and are expected to generate a return in line with  $R_m$ .

## Gearing (g)

- 6.18 In order to combine the cost of debt and cost of equity in the right proportions for the calculation of the WACC, we need to make an assumption on gearing. Gearing here is defined as the proportion of the company's RAB that is financed by debt. A higher level of gearing is generally seen as reducing the overall WACC, at least initially, through substituting less expensive debt for more expensive equity. This reflects the impact of taxation and the fact that companies are liable for tax on profits but debt interest payments are tax deductible. Gearing up therefore delivers a tax advantage (tax shield) to a portion of a firm's returns. Gearing up however after a certain point can start to reduce the company's financial robustness. The optimal level of gearing that is generally adopted in regulators' WACC calculations is intended to reflect the appropriate trade-off between these two effects. The costs of debt and equity also applied in the WACC calculation need of course themselves to be consistent with this gearing assumption.
- 6.19 The notional gearing level used by regulators when calculating the WACC is normally informed by the judgments of rating agencies on the requirements on regulated firms to maintain appropriate (investment grade) credit ratings. Optimal gearings are likely to differ between sectors and in principle between companies within an individual sector. Relevant factors in determining optimal gearing (in addition to the value of any tax shield) include stability of technology and elasticity of demand facing a firm as well as the attitude of the regulator on risk sharing between customers and the regulated company.
- 6.20 A concern of regulators in recent years has been a tendency for regulated companies to gear up well above the optimal rates used in the determination of the WACC - without potential for either increased risks on consumers or insufficient funding of investment going forward. Both Ofgem and Ofwat have addressed this issue by introducing arrangement for clawing back the tax benefits from debt interest payments above the gearing assumption used to estimate the WACC.

## The role of GB Precedents

- 6.21 Some of the components of the WACC- the risk-free rate and the expected return on market portfolio are market driven and are not impacted by the particular circumstances of the sector or firm which is regulated. Considerable work is carried out by GB regulators for energy and water (Ofgem and Ofwat) in calculating these macroeconomic parameters. In some instances, even when done at broadly the same time, different judgments emerge from each regulator. It is important that there is no inconsistency within the Utility Regulator when calculating these parameters where price controls decisions are being made in similar time periods. We will in setting macroeconomic parameter take cognisance of GB precedents while ensuring no inconsistency within the Utility Regulator.
- 6.22 In setting company specific components of the WACC (debt premium, equity beta and gearing) we will also be informed by GB judgments but will ensure that our decisions reflect NI circumstances. This includes the sharing of risk between the company and the customer as well as other factors such as ownership. Alternatively, where we accept GB precedents in the calculating such components, we will ensure that our decisions on risk sharing also reflect the approaches taken to risk sharing in GB. (The issue of risk and the impact on the cost of capital is discussed further in chapter 7).

<b>Q18 Do respondents agree with the proposed approach on the use of GB precedents when estimating the cost of capital?</b>
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## Approach to financeability

- 6.23 As noted in Chapter 2 the Utility Regulator has a statutory duty not only to protect the interests of consumers but also to ensure that licensees are able to finance their activities. The predominant approach by regulators, including the Utility Regulator, to this latter duty has been to ensure that if a company was efficiently managed and financed it could earn a return at least equal to its cost of capital. A more recent and perhaps more inexact concept has been that of financeability. In principle a company offering expected returns equal to its cost of capital should by definition have no difficulty in financing its activities. However it has been argued that a company which is earning its cost of capital may not necessarily be financeable
- 6.24 CEPA in their May 2010 report for Ofgem ‘RPI-X@20: Providing Financeability in a Future Regulatory Framework’ provided what they described as a ‘stylised interpretation of the approach adopted to financeability in most sectors’ namely: ‘whether a company is able to fund its investment programme and meet basic financial ratio tests, based on the way credit rating agencies assess whether a

company is investment grade, given the expected cash flows generated by the regulatory price determination'

- 6.25 This can arise as a result of the way regulators calculate revenues required to fund a company's rate of return; historically this has been estimated in real terms on a RAB which is adjusted for inflation. The result is that in the early years of investment the return is too low and in later years too high with the return adequate over the investment period. As a consequence, the return on debt in the early years may be insufficient to pay nominal interest rates to banks and bondholders. In a company with a fairly balanced (steady state) investment profile, this will not be a problem as under-recovery in cash flows in more recent loans/investments will be compensated by over-recovery in earlier ones. The problem can arise where there are significant increases in investment requirements leading to new /recent capex becoming an increasing proportion of the existing asset base.
- 6.26 Ofwat and Ofgem, when faced with this problem in earlier price controls, have increased cash flows to the company in a NPV neutral manner by either accelerated depreciation or simple revenue advancements - which is offset by revenues in the future or in a NPV positive manner (where customers effectively pay twice). An example of the latter was an uplift in the WACC in the 2004 water determination PR04.
- 6.27 The obvious short-coming of the NPV 'positive' approach is that if the values of the price control building blocks (rate of return and allowances) are correct customers are over-paying. While this does not result from the NPV neutral approach it too has its short-comings. For example it is argued that it is not the way competitive markets work; CEPA in their report for Ofgem suggest that in such situation companies would normally inject more equity into the company in what a temporary mismatch of costs and revenues. If there is a long-term mismatch the inference is that some of the basic building blocks may be inadequately calculated.
- 6.28 Ofgem published its final decision on RPI-X@20 review and the RIIO model for network regulation in October 2010. Its conclusions on financeability restated below reflect a move away from its previous stance:

"We will ensure that efficient delivery of outputs is financeable by committing to published principles for setting a weight average cost of capital (WACC)-based allowed return to reflect the cash flow risk of the business over the long term. Financeability will be assessed in the round, including a cross-check against relevant equity metrics and credit rating ratios. As now, network companies will be expected to manage their business, including capital structure, efficiently to ensure they are financeable.'

6.29 Although not always set out as explicitly, the Utility Regulator has, in practice, already adopted a common and relatively robust approach to considering financeability. This is based around:

- making an appropriate allowance for the cost of capital and depreciation to allow companies, over the economic life of the asset, to earn an adequate return on capital invested;
- where appropriate, a requirement for companies to have an investment grade credit rating;
- the gas sector and T&D in electricity include limits on the gearing of the distribution companies;
- no other revenue adjustments or advancements to address concerns about financeability.

6.30 This approach is very similar to the principles Ofgem have decided upon in its RPI-X@20 project. The Utility Regulator will continue to rely on setting an appropriate cost of capital and depreciation allowance to ensure financeability. Additionally, we will not seek to make any additional adjustments where companies raise concerns about short term financing. This is premised on the idea that rational investors will recognise that the combination of a RAB and an independent regulator provides assurance of a return on and of capital over time. The role of financial ratios is to inform the regulator on the need for equity injection with responsibility for financing decisions lying with the regulated company.

<b>Q19 Do respondents agree to the proposed approach on financeability?</b>
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### **Approach to embedded debt costs**

6.31 Regulators when determining the cost of debt normally take a forward looking stance to ensure an adequate signal for new investment. Focusing solely on the appropriate remuneration for new investment may not however be an appropriate rate for the remuneration of debt cost of existing investment. When financing costs are rising it may provide a windfall gain for companies; where rates are falling it can lead to financeability issues. There seems therefore to be a case for making some adjustment to the forward –looking estimate of debt to reflect embedded debt costs i.e. the actual debt costs of a regulated company.

6.32 This reflects the approach of the Competition Commission have provided us with some useful information on embedded debt within its investigations.

### **Stansted Price Control Review (Appendix L - Cost of Capital)**

*“At future CC reviews, provided that fixed-rate debt has been incurred prudently and efficiently, having regard to the market conditions at the time, it may be prudent for our successors to consider that it is appropriate that price caps should provide the airports*



*with sufficient revenue to cover the costs of servicing that debt until it matures. We would expect to apply this principle symmetrically, so that the cost of servicing historical debt which turns out to be less expensive than the prevailing market rate also passes through to users.”*

### **Bristol Water plc Price Limits Determination (Appendix N - Cost of Capital)**

*“It is sometimes suggested that regulators should seek explicitly to set required return equal to some concept of long-term average cost of capital rather than for the specific price-cap period. It seems to us that this would not be consistent with our duties in this reference. Setting required return below the expected cost of capital for the period would not be consistent with the section 2(2A) (c) duty to secure that the company can finance the proper carrying out of its functions. Equally, setting required return above the expected cost of capital in the relevant period would not seem consistent with the consumer objective under section 2(2A)(a).*

*We consider that there are three elements to the cost of debt:*

- (a) the cost of existing fixed-rate (embedded) debt;*
- (b) the cost of existing and new floating-rate debt (which depends on short-term interest rates during the price control period, as well as the relevant spread over Government debt); and*
- (c) the cost of new fixed-rate debt (which depends on interest rates for this duration and type of debt at the time of issue, as well as the relevant spread over Government debt).”*

*Each of these three elements should be weighted according to its projected importance in the company’s overall debt during the projection period.”*

6.33 One issue in addressing the embedded debt issue is the issue of incentivisation on the company to raise finance efficiently. Therefore while making no adjustment for embedded debt can be rejected on the grounds cited above equally making an adjustment to reflect automatically the actual cost of debt incurred by an individual company should also be rejected. Any adjustment for embedded debt should reflect an assessment of what would have been the cost of debt if procured efficiently and prudently, given the market conditions at the time. It should also be done on a symmetrical basis to ensure both consumers and companies are protected equally.

<b>Q20. Do respondents agree with the approach to embedded debt costs outlined above?</b>
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### **Approach to small company premium**

6.34 Proponents of a small company premium have argued for a premium on both the cost of equity and the cost of debt. Clearly, the inclusion of a small company premium represents a departure from the CAPM, in which expected returns

depend only on the systematic risk exposure of investors and not on the size of the company raising finance. CAPM however has been subject to many critiques, and many alleged “anomalies” have been identified. One such is the “small firm effect”. This was first documented by Rolf Banz in 1981.

- 6.35 Since 1926, the (arithmetic) average annual difference between returns on the shares with the smallest market capitalisations and those with the largest such capitalisations has been 3.54 per cent (the geometric average difference was 2.6 per cent). The “small-to-big” factor appeared in the Fama-French three-factor model (along with the Fama-French version of beta and a book-value-to-market-value factor). The popularity of the Fama-French model and the apparent significance of this small company premium led to a widespread sense that this was an important anomaly in respect of CAPM that might necessitate some adjustment in a number of settings – perhaps even in regulatory determinations.
- 6.36 For the period since 1981, however, there appears to be no small companies premium —it seems to have disappeared as soon as it was discovered (for the period 1981-2007, the geometric average annual small company effect was 0.08 per cent); indeed, during the 1990s there was a “small companies discount” (geometric average: -2.1 per cent). The current state of play is that there is very widespread doubt as to whether such an effect exists at all.
- 6.37 We propose therefore to reject the concept of a small company premium in estimating the WACC. To the extent that there are extra transactional costs incurred in the financing costs of small companies, we will consider this in our decisions on allowed costs or in our decisions on debt costs when choosing from a range of cost of debt estimates. In doing so, we will try also to ensure that small companies are not unduly encouraged at the expense of larger more efficient entities.

<b>Q21. Do respondents agree with the above approach on small company premium?</b>
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## CHAPTER 7 - RISK AND UNCERTAINTY

### Chapter summary

This chapter looks at a number of issues dealing with risk and uncertainty. This includes the different types of risk and how mitigation impacts on the WACC and allowed revenue decisions. It also included a discussion on the mechanisms we use to manage risk and uncertainty. Finally the chapter sets out some common principles for applying risk-mitigation mechanisms.

### Types of risks and the impact of risk mitigation

- 7.1 The term “risk”, in the sense that we are using it, is defined as uncertainty of outcome which can be either a positive opportunity or a negative impact. Regulators when considering the rate of return and allowed costs divide risks into two separate categories:
- (a) systematic risks ; and
  - (b) specific risks.
- 7.2 Systematic risks are risks that affect the whole market and are non-diversifiable. Systematic risks relate to outcomes that cause the whole market to move, such as economic growth or recession, or wars. Even fully diversified investors are subject to systematic risk, and require compensation for it through the cost of capital.
- 7.3 Specific risks affect a particular class of asset and are diversifiable. An example of a specific risk would be the cost shock caused by the failure of the engineering solutions adopted by a network company (assuming the price control had placed that risk onto the company). Such risks can be offset by investors diversifying their investments.
- 7.4 The rate of return estimated under the CAPM model rewards only systematic risk. The rate of return under the CAPM is positively related to the variability of the risk. Specific risks only apply to the particular class of asset and do not enter into the equity component of the weighted average cost of capital (WACC). It is assumed that this class of risks are diversified away with a sufficiently large portfolio.
- 7.5 A regulator can reduce a company’s exposure to systematic risk (i.e. the spread of risk around an expected outcome) using regulatory tools such as cost pass-through and indexation. In such cases the risk is passed from the company to the customer and the cost of capital is reduced. Typically this will be reflected in a reduction in the equity beta but also in the debt premium to the extent that it also reflects systematic risk.

- 7.6 The likely impact of actions by the regulator to reduce specific risks is rather more complex. It is broadly accepted in regulated sectors that expenditure allowances should reflect expected outcomes. Any specific risk mitigation measures which reduce expected costs (e.g. a cap on a company's exposure to cost overruns) would typically be translated into a reduction in allowed costs. This should not however preclude the possibility of a reduction in specific risks impacting on the WACC. It might be expected that a significant element of any debt premium should reflect specific risk (though there may be a systematic element). Therefore, there may be scope for a reduction in the debt premium where mitigating measures for specific risks are likely to reduce the risks to the bondholders.
- 7.7 In general, therefore, where mitigation measures by regulators reduce expected volatility of cash flows - and hence default risks - this can lead to a lower debt premium or potentially the ability to sustain a higher level of gearing with an unchanged debt premium.
- 7.8 When considering risk mitigation, and hence risk allocation, it is broadly accepted that risks should be borne by the party best able to control them. Risks can be borne by the company (both managers through bonus schemes and its owner in the form of equity investors and bond holders), consumers, taxpayers (e.g. if government bailout is required), wider society (e.g. negative externalities) and speculators (if companies and consumer hedge).
- 7.9 For the most part regulators are concerned with the risk borne by the utility and consumers. As part of their review on future price controls, Ofwat commissioned Europe Economics to provide a review of principles and practice in the use of regulatory tools to provide incentives and manage risk. In the paper Europe Economics highlight some salient points<sup>7</sup>:
- a) There are no clear criteria for deciding the optimal risk allocation.
  - b) A clear principle put forward in academic literature is that optimal risk allocation requires the risk to be taken on or internalised by the party best able to control it.
  - c) While there are some risks outside control of company (e.g. increase in rate payments) companies tend to have at least some control over most risks.
  - d) There are two issues to consider: (1) the degree to which the upside or downside associated with the risk is within the party's control; and (2) the degree to which the party is able to deal with the risk. The inference seems to be even if it has little control over the risk, if it can manage the consequences then it should manage the risk.

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<sup>7</sup> See pages 30 onwards of "*Future Price Limits – Risks and Incentives: Options Appraisal*," Europe Economics, 4 June 2010. This paper can be accessed at the following link: [http://www.ofwat.gov.uk/publications/commissioned/rpt\\_com\\_1010fplrisk.pdf](http://www.ofwat.gov.uk/publications/commissioned/rpt_com_1010fplrisk.pdf)

- e) Risk aversion of customers: there may be scope for lowering the risk of volatile prices coupled with higher average prices for some customers.
- f) Interactions with incentive schemes: limiting price volatility tends to transfer risks to firms but it can mean firms have lower incentives for efficiency.
- g) Available options for reducing risks. Companies may be able to externalise risks through, for example, outsourced contracts or insurance e.g. Glas Cymru.

7.10 In considering who can best manage risk there is no clear distinction between systematic and specific risks. There might however be some tendency for systematic risks which are essentially non-diversifiable to be less easily managed by the company.

7.11 Whatever the precise allocation of risk between the consumers and the company it is clear that risk mitigation by regulators will impact on a company's allowed revenue. In summary, anything we do as a regulator which impacts on the level of systematic risk borne by the company should be accompanied by a corresponding adjustment to the WACC (primarily the equity component). For changes to the level of specific risk, adjustments should be made to allowable costs which we determine in our price controls. Where risk mitigation (both specific and systematic) reduces the risk of default there is scope for a reduction in the debt premium or an increase in the optimal gearing assumption or some combination of both.

**Q22. Do respondents agree with this description of different types of risk and the scope for mitigation?**

### **Implementation**

7.12 Implementation of this approach is unlikely to be straightforward. It is not always easy to separate systematic from specific risks or indeed to ensure a clear connection between risk mitigation measures and a specific risk category. Similarly it may not be easy to estimate with any degree of accuracy expected values for allowed costs and the impact on them of any reduction in specific risks.

7.13 A practical approach may be as follows:

- as a starting point we should observe the prevailing sector WACCS set by our counterparts in GB;
- we should then, in setting our price controls, consider if the risks borne by our regulated companies mirror those of the relevant utilities in GB;
- if we judge this to be broadly the case the GB WACC is appropriate (subject to any differences of opinion we might have on the judgments by GB regulators of the individual components of the WACC);

- expected unit values for allowed revenue are also, in such an instance, likely to be in line with GB (subject to any regional effects on costs); and
- if we judge the risks to be different we should adjust the WACC and/or expected revenues based on the approach outlined above.

We will not however allow companies to seek GB rates of return while proposing much more generous levels of risk mitigation than those facing equivalent GB companies. This is already reflected in our approach to mutualised entities which face much lower costs of capital in return for greater risk transfer to consumers. As indicated in the Utility Regulator’s recently published response to the discussion paper ‘Assessment of the Potential Financing Options for Utility Networks’ we are willing to consider in the future proposals which trade off lower cost of capital for greater customer risk provided the benefits to customers exceed the costs.

<p><b>Q23. Do respondents agree with our proposals on how to implement risk mitigation?</b></p>
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**Mechanisms used to mitigate risk and uncertainty.**

7.14 The Utility Regulator uses range of mechanisms to mitigate risk and uncertainty which can be categorised as follows:

- Pass-through;
- Correction mechanisms; and
- Interim reviews.

Pass-through

7.15 Pass-through costs are – as the name suggests – passed through entirely to consumers by the regulated company. As a general rule a pass-through cost tends to be one whose level the company has little or no ability to influence. Also, the magnitude of cost tends to be particularly uncertain although this need not necessarily be the case for a cost to qualify as pass-through (e.g. our licence fees can arguably be forecast with reasonable accuracy).

7.16 In practice pass-through costs tend to be dealt with as follows. The cost is forecast *ex-ante* during the development of the price control and an estimated allowance granted as part of the determination. Over the course of the control period, in each year the actual cost is compared to the forecast cost and the variance is recorded (or logged). A higher actual cost is “logged up”; a lower actual cost is “logged down”. At the end of the control period, an aggregate figure is then calculated, with a view to being returned to – or recovered from – the company in the next price control period.

## Correction Mechanisms

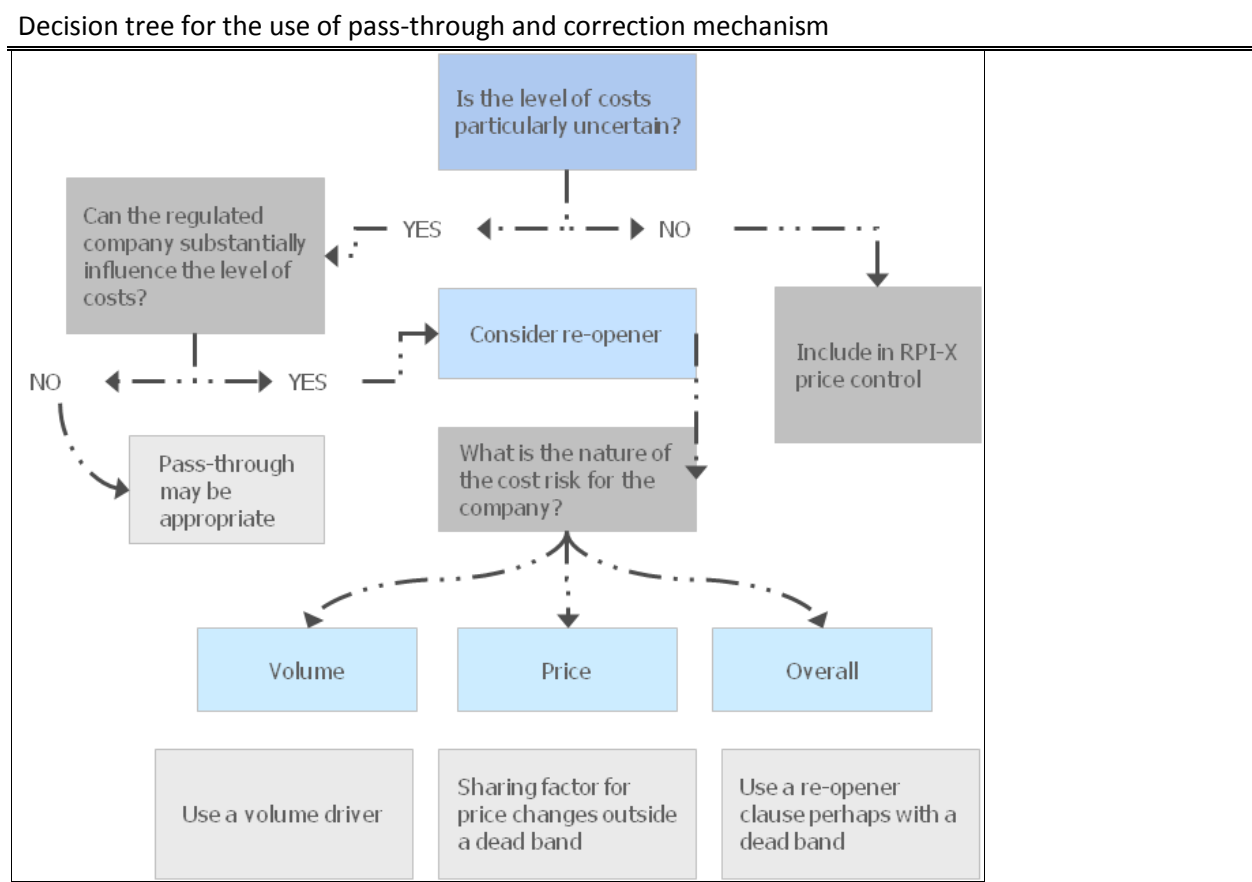
- 7.17 In addition to pass-through costs there is a range of correction mechanisms where because of difficulties in making accurate forecast of costs or volumes there are arrangements to adjust allowed revenues to reflect actual outturn costs.
- 7.18 In water, we use the terms “logging up” and “logging down” in the context of unforeseen projects occurring (or foreseen projects not occurring) and the consequent adjustments needed in the next price control to compensate NI Water (or recover from NI Water) for the unexpected.
- 7.19 In gas we apply a similar methodology that sees allowances adjust upwards or downwards, depending on the actual outputs that the gas companies deliver. As an example, in our determination we might set an allowed unit cost for connecting a domestic property. The total sum we would then allow as part of the determination is equal to the unit cost times the forecast number of connections per year over the control period. However, *ex-post* we then correct the overall allowance using the actual number of connections. In the case of higher outturn, we would add an amount to the regulatory asset base in the next price control, and vice versa for lower outturn. The calculation is done so as to be neutral to the company and consumers i.e. equivalent of having got the forecast exactly right in the first place.
- 7.20 Other correction mechanisms can be employed *intra* price control. For example, the indexation element embedded in most of our price controls (i.e. the RPI-X aspect), tends to be incorporated on an annual basis. That is, in the annual setting of tariffs the allowed revenues determined as part of the price control are adjusted in line with RPI-X, and the tariffs calculated using the inflated revenues. Similarly where we set a revenue control, any over or under recovery in a particular year due to say, deviation in actual volumes from forecast, can be added to the revenue to be recovered in the following year – another example of an *intra* price control correction.

## Interim Reviews

- 7.21 An interim review involves revisiting the determination and potentially reviewing and/or amending any aspect. In gas, the licences we have granted only allow for interim reviews in the event of a significant deviation of outturn from allowances or forecasts. Specifically, an interim review can only be triggered if capex costs deviate from allowances by 15 per cent or more, or if gas volumes throughput deviate from forecasts by 15 per cent or more. It should be noted that only by way of an interim review can adjustments be made to the final determination issued for the price control.

## Common principles for applying risk-mitigation mechanisms

- 7.22 We believe that it is important to develop common principles to the application of risk mitigation mechanisms across the sectors we regulate. Relevant factors are likely to be the extent of uncertainty around costs and the ability of a company to influence the level of costs. We may wish to review the scenarios enshrined in the licences that will trigger an interim review.
- 7.23 The decision tree outlined below (provided by CEPA in an internal consultancy report for the Utility Regulator) may be a useful guide to informing a principle-based approach to the treatment of pass-through or other types of correction mechanism.



Source: CEPA report for Utility Regulator

- 7.24 On the basis of the above decision tree, the following principles might be usefully applied.
- Costs that the regulated company has little or no ability to influence should be considered eligible for treatment as pass-through;



- Costs that the regulated company can substantially influence but cannot accurately forecast *ex-ante* should be considered eligible for inclusion in a suitably designed correction mechanism;
- Costs that the regulated company can substantially influence, and can be forecast with reasonable accuracy, should be granted a fixed allowances and included as part of RPI-X regime; and
- Interim reviews should continue to be used only if the circumstances cited in the licence arise. There may be a need to review these to ensure consistency.

**Q24. Do respondents agree with the categorisation of risk mitigating mechanisms identified above and the proposed principles for their application?**

## CHAPTER 8 REPORTING AND MONITORING ARRANGEMENTS

### Chapter summary

This chapter examines proposals for improving reporting and monitoring arrangements including the proposal for the use of a reporter in energy, a consistent approach to address the issue of deferred capex and annual cost monitoring arrangements.

### Introduction

8.1 The Utility Regulator's experience of regulating network price controls in recent years suggests a greater need to tackle asymmetry of information between the regulator and the regulated company. The discussion in Chapter 5 on how best to incentivise capex efficiency supported the need to have a robust regime for dealing with the issue of deferred capex. The aim was to ensure that a company does not game the incentive regime by deferring capex even if it leads to poorer/service/higher costs for customer in the long-term. The need also to have a robust approach to annual monitoring was also identified. Our experience of the use of a Reporter in water suggests that it can be useful in tackling the problem of information asymmetry and could also usefully be used in gas and electricity.

### The use of a Reporter

- 8.2 A Reporter is an independent professional appointed to act as an auditor, certifier and commentator on the various regulatory submissions made regulated companies to the regulator over a medium to long term.
- 8.3 Ofwat, the economic regulator for the water industry in England and Wales, introduced and developed the use of the "Independent Reporter" to act as an auditor, certifier and commentator on the various regulatory submissions made by the water companies to the regulator. The same approach has been adopted by the Water Industry Commission for Scotland (WICS) and the Water Directorate of the Utility Regulator.
- 8.4 The key characteristics which distinguish a Reporter from a technical assessor working on behalf of the regulator are:
- The Reporter is independent making their judgement on the issues being addressed and the level of sample audit necessary to form an opinion.
  - The Reporter is a named individual supported by a small, capable and stable technical team.
  - They are paid for by the company but have a primary duty of care to the regulator.

- They are embedded in the company over a period of 5 to 10 years, building up background knowledge and relationships at all levels which help challenge the company's submissions. Continuity and expertise is a key advantage.

8.5 The pros and cons of a Reporter based on our experience in water are summarised below.

### **Pros**

- Reporters provide a technical audit function providing challenge to the company and assurance for the regulator.
- Reporters can complement the skill sets of regulators, providing current technical knowledge that a regulator may not wish to maintain.
- Reporters develop a broad understanding of the company over time and over a range of issues which improve the ability to challenge new proposals.
- Reporters can act as the conscience of the company moderating the submissions the company makes to the regulator.
- Reporters can prevent gradual creep in company submissions. Ongoing low level scrutiny encourages companies to become self policing.
- Reporters bring a practical approach to the development of new processes (for example "forward looking risk based asset maintenance") separating practical solutions from hype.
- Reporters provide commentary as well as assurance, giving regulators a broader insight into company submissions.
- Reporters challenge on the basis of experience and knowledge as well as process.
- Reporters become embedded in the company as part of the normal process of assurance which can be less intrusive and less disruptive than the introduction of advisers by the regulator on individual submissions.

### **Cons**

- Reporters introduce a significant additional cost. Typically, costs to consumers are £230k per annum per company.
- Despite the requirement for independence, Reporters may still be seen as being on the side of the regulator. This can impact on the behaviour of the company and reduce openness. In an attempt to prevent this and maintain a relationship there is a danger that the Reporter may tend to caution in their views.
- The assurance to the regulator is dependent on the opinion and skills of the individual Reporter. It is difficult for the regulator to assess this in a one-to-one regulatory environment.
- The close and long-term working relationship between Reporter and company risks the Reporter being "captured" by the company. The Reporter engages closely with the company and less so with the regulator. As a result, the company can influence the development of the audit and the report while the regulator is must define the audit blind and receives the report as a completed opinion.

- Reporters comment in terms of reasonableness. Reasonableness is an ill-defined and broad spectrum test which leaves much to individual opinion. To say something is unreasonable requires strong evidence. There may therefore be a tendency, which favours the company, towards a conclusion that a submission is reasonable unless it can be proven otherwise.
- The need to provide a balanced view can result in a report listing comments and identifying weaknesses without a definitive answer on which a regulator may rely.
- Reporters must manage the commercial, professional and personal pressures which can undermine true independence.
- Reporters audit a wide scope of work on a sample basis. It is questionable whether the level of sample audit carried out by a Reporter is representative, limiting the effect of any conclusion.
- In one-to-one regulation the independent professional status of the reporter may lead other stakeholders to give the company and regulator opinion equal weight and see the reporter as the final arbiter.

8.6 A comparison of the pros and cons above suggests that the use of a Reporter is not a panacea. In particular we are aware of the difficulties of using a reporter where there is only a single company. The issue of assessing a Reporter's views where there is only one company being regulated should not be under-estimated. The need always to ensure that the regulator is the final arbiter is also important. On balance however the Utility Regulator considers that there are many advantages to using a Reporter and is proposing to apply the concept to gas and electricity.

8.7 The detail of the proposal still requires to be worked out. Next steps would be to:

- define the scope for a Reporter in each sector;
- consider how the delivery of Reporter services should be developed to deliver the best advice in each sector taking account of the dynamics of one-to-one regulation;
- develop reporting protocols and reporting requirements and amend company licences; and
- consider the procurement of these services.

<p><b>Q25. Do respondents agree with the proposal to extend the concept of a Reporter to the gas and electricity sectors?</b></p>
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### **Treatment of deferred capex**

8.8 As noted in Chapter 5 the issue of deferred capex has been an under-developed element of price controls. However it is a live issue for future price controls in all three directorates:

- In gas, we have always stated historically that we did not consider it appropriate for the companies to keep allowances for infrastructure that was not delivered. We have suggested that we would either: (1) require that allowances for deferred projects be used immediately to finance other projects for which no allowance has been granted; or (2) that we would take back the allowances altogether in future price controls.
- We have considered this issue extensively as part of the current Phoenix Natural Gas price control.
- In electricity, network capex costs are treated as pass-through in the current T&D price control (RP4). The issue of deferred capex therefore does not arise, since NIE T&D receives allowances only for those projects actually undertaken. It will however be an issue to RP5.
- In water an approach similar to that being used by Ofwat in GB is to be applied. In essence this involves linking allowed revenue to physical outputs and monitoring to establish if they have been built as planned. If there has been an underspend due to failure to produce the relevant physical outputs (deferred capex) the RAB is adjusted to reflect this and with adjustments to depreciation/rate of return to reflect this. No adjustments are made for overspends.

8.9 Going forward we are proposing to implement for all network price controls an approach which reflects the approaches currently being considered by gas and water. Two approaches are being considered.

**(a) Allowances only for the work that is done**

This approach could apply to projects that are discrete and where delivery of physical outputs (e.g. gas pipes or distribution lines) are clearly identifiable, and can be linked to an ex-ante allowance granted for the delivery of such projects. At the end of the control period our office would then assess if the outputs were delivered or not, and if not the allowance would be retrospectively removed from the company entirely.

*Advantages*

- Clear and simple to implement *for projects whose physical outputs are clearly identifiable.*
- Customers are not made to pay for infrastructure before it is built.

*Disadvantages*

- With no way to benefit from deferral (even if it is the right thing to do), the company is incentivised to build everything it receives an allowance for.

## **(b) Allow some reward for efficient deferral**

This time our office would assess if the deferral was somehow efficient. For example, consider a project to reinforce the network on anticipation of increased demand. Then, perhaps due to an economic downturn, the increased demand does not materialise. The appropriate course of action for the company is to defer the reinforcement, rather than spend money on infrastructure (and impose additional costs on customers) that is not now required.

The first approach described above does not reward the company for deferring the project, and so may incentivise the company to complete it anyway. However, if we allowed the company to retain at least some of the allowance, this may encourage deferral where it is efficient to do so.

### *Advantages*

- The company is no longer incentivised to build everything it receives an allowance for.

### *Disadvantages*

- It may be difficult to assess if deferral is truly efficient or not.
- The regulator has to decide on a fair quantum of reward.

8.10 Our view is that the first proposal should be the default position. If the physical outputs for which there is allowed revenue are not produced the relevant allowance would be removed. There would therefore be a strong presumption against rewarding deferral of expenditure. However, if the company can make a case for the deferral being a genuine efficiency which reflects genuine changes in demand or an innovative approach then a sharing of the savings could be considered. The Utility Regulator takes the view that these are not likely to be common occurrences and the threshold for acceptance of the case for rewarding such 'efficiencies' will be a high one. This approach is likely to work best in situations where the regulator had the necessary resources and expertise to assess capex submissions from regulated companies. A system where achievement of final outputs/outcomes (e.g. minutes lost, renewable generation connected etc) is linked to equity returns is also likely to help to ensure that firms did not try to game such incentives. It is also clear that to make this work there is a need for effective annual monitoring by the regulator. Progress by directorates on this is the subject of the next section.

<b>Q26. Do respondents agree with the above approach to deferred capex?</b>
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## Annual cost monitoring

### (a) Water

- 8.11 As the economic regulator of the water and sewerage sectors in Northern Ireland, the function of the Utility Regulator is to protect the interests of consumers while enabling NI Water to carry out and finance its functions. One of the ways we achieve this balance is to set the price, investment and service package that consumers receive from NI Water; this is performed through the Price Control process. We also seek to ensure that NI Water deliver the funded outputs, improve the level of service and value for money to consumers through monitoring and reporting annual costs and performance. This is achieved by requiring NI Water to submit a range of regulatory submissions, the main elements of which are summarised below.

#### Annual Financial Accounts

- 8.12 Each financial year on the 15<sup>th</sup> July we receive NI Water's Regulatory Accounts. These are bound with NI Water's Statutory accounts and both sets of accounts are audited and receive an Auditor's opinion as to whether they represent a 'true and fair' basis of the financial activities of the business. They are both published within NI Water's Annual Report and Accounts document.
- 8.13 NI Water's Auditors have a duty of Care to the Utility Regulator and we have in place a signed Engagement Letter between NI Water's Auditor, NI Water and the Utility Regulator.
- 8.14 Statutory accounts are now prepared under International Financial Reporting Standards. Regulatory Accounts are prepared using the guidance incorporated within the Regulatory Accounting Guidelines and the guidance stated within Condition F of NI Water's Instrument of Appointment.
- 8.15 The Regulatory Accounting Guidance state the presentation, content and form of regulatory accounts and additionally require NI Water to provide a reconciliation between the Statutory and Regulatory Accounts to ensure transparency of costs and accounting conventions – for example infrastructure renewals accounting is permitted in Regulatory but not Statutory reporting.

#### Nominal ledgers

- 8.16 NI Water submits its nominal ledger each July with its annual accounts. This is an important return and forms the basis for the preparation of NI Water's statutory accounts. It provides a detailed cost breakdown for each principal ledger code – e.g. rates, power, salaries and wages, legal and professional

costs, etc and allows major variations between given financial years to be assessed.

## Annual Information Return

- 8.17 Similar to the English, Welsh and Scottish Water & Sewerage Regulators (i.e. Ofwat and WICS) we have an annual process for monitoring NI Water's costs and performance through the completion of a series of regulatory tables and information requirements. This return is entitled the Annual Information Return (Ofwat and WICS version's is entitled the June Return). NI Water must report on its outputs, activities, regulatory accounts and financial performance during the prior year within the AIR.
- 8.18 The Utility Regulator's Annual Information Return is used to:
- monitor NI Water's progress towards achieving higher quality objectives;
  - ensure that consumers' standards of service are protected;
  - compare NI Water's performance to that of other water companies both presently and over time;
  - measure and compare NI Water's costs; and
  - prepare for the next price control period and its review of price limits.
- 8.19 The AIR consists of a large spreadsheet which NI Water are required to complete. It has colour coded cells which clearly identify which cells are calculated, historic data or input data and the rules for completion are generally well understood by the company. In addition, we submit Reporting guidance for each line within the tables and NI Water are required to submit a supporting commentary for each table contained within the AIR. The commentary document is often a source of useful additional information and may contain detail on supporting calculations, variations from year to year, underlying assumptions etc.
- 8.20 The AIR contains a large volume of data including:
- Board overview: this sets out how the Board of Directors of NI Water considers it has performed and includes a series of tables including performance of assets, expenditure, Regulatory Asset base, Key financial indicators, leakage and water balance, opex per property by service, capex per property by service and metering aspects.
  - Financial performance through the presentation of Regulatory Accounts which relate specifically to the regulated business are financial statements prepared in accordance with UR guidance which has been adopted from Ofwat. This includes profit and loss accounts (under the Historic cost and Current cost), balance sheet (under the Historic Cost and Current Cost conventions), statement of recognised gains and losses, cashflow statement, taxation calculations and analysis of company borrowing, working cost requirements;



- Reporting of Regulatory costs e.g. general and support, hired and contracted as split by service e.g. water distribution, water resources and treatment, sewerage treatment, sewerage, sludge treatment and disposal, etc.
- PPP costing per service and unitary cost aspects.
- Reporting of capital programme costs and asset additions by programme and type of work.
- In addition, a number of tables are used to report non financial data:
  - Water and wastewater quality.
  - Customer numbers for each customer group and type e.g. water, sewerage, trade effluent, unmetered, metered, etc.
  - Water balance, leakage and metering data.
  - Key performance Indicator performance and Customer Service aspects.
  - Length of mains and asset performance including PPP assets and schemes.
  - Levels of Service.
  - Health and Safety Reporting
- The independent consultant engineer's ('Reporter's') report which sets out the Reporter's assessment of the company's performance. His report includes details on NI Water's progress and performance and includes the Reporter's assessment on the accuracy and confidence levels of the data submitted by the Company.
- The Auditor's report on the financial tables including the constituents of the Regulatory Accounts which they are required to examine under the terms of NI Water's Instrument of Appointment Condition F.
- The Auditor's report on the Regulatory Accounts which is performed in a similar way as they do on statutory accounts.

8.21 Following the AIR submission and the Reporter and Auditor Reports on NI Water's AIR we have the opportunity to raise queries on areas we consider merit additional information or clarification. This is achieved through the established query process which has been operating successfully for three years.

8.22 To increase transparency we publish a public domain version of NI Water's AIR tables and also a public domain version of the Reporter and Auditor Reports.

## Benefits of the Annual Information Return

8.23 The principal benefits of the Annual Information Return

- It allows consistency of information which allows data to be reviewed from year to year on a comparable basis.
- It permits benchmarking of NI Water's costs and performance against that of other companies in England, Wales and Scotland since they report data in a similar format.

- The use of confidence grading allows us to evaluate the company's assessment of the data accuracy and reliability and the Independent Reporter's opinion on the underlying assumptions.
- It allows monitoring against predefined costs and output levels for a Price Control and assists in future price setting processes.
- It encourages continuous data improvement and promotes an awareness of the importance of data quality within NI Water.
- Confidence in the AIR submission is improving from year to year. NI Water are continuing to improve processes for completion of AIRs and have their own documented procedures for completing tables and commentary details which have been subjected to Internal Audit, Reporter and External Auditor scrutiny. NI Water have included processes for ensuring that each line of the AIR the data point and commentary is prepared, checked and approved.
- It maintains a focus on the company to perform, to meet and seek to outperform the Price Control outputs, efficiency and projected levels of service.
- Its enables the areas of success and failure to be identified and thereby praised or addressed in subsequent years and price controls.
- It supports the principles of better regulation, that of accountability, consistency and transparency.

## Annual Cost and Performance Report

- 8.24 The Utility Regulator publishes an annual Cost and Performance Report covering NI Water's activities during the preceding year as required under Article 5 of the Water and Sewerage Services (Northern Ireland) Order 2006. This annual costs and performance report is designed to give consumers and stakeholders information on the performance of NI Water.
- 8.25 Ofwat and WICS also publish annual reports covering regulated company's costs and performance over the previous financial year.

### **(b) Gas**

- 8.26 In 2007, Ofgem began putting in place an annual cost reporting regime for the Gas Distribution Networks (GDNs) in Great Britain (GB). The regime (now fully in place) requires the GDNs to deliver on an annual basis, cost information pertinent to the GDN price controls.
- 8.27 In GB, annual cost reporting in the electricity distribution industry and gas and electricity transmission industries has proved itself successful in forcing regulated utilities to ensure their reporting systems are robust. The process has also improved Ofgem's understanding of costs and allowed more accurate reporting on progress against price control allowances. Ofgem expects that the annual cost reporting regime for the GDNs will yield similar benefits.

8.28 The Utility Regulator has put in place a similar annual cost reporting regime for the gas distribution and supply industries in Northern Ireland. The regime enhances our ability to fulfil our duties in relation to the gas industry. It can be summarised as follows:

- Cost reporting will supply on an annual basis, all relevant costs and working capital requirements incurred in running their regulated businesses.
- This will be under-pinned by the Profit and Loss Account, Balance Sheet and Cash Flow Statement.
- The information submitted must tie in with the Regulatory Accounts that are audited by an External Auditor.
- A reconciliation is required from the Statutory accounts to the Regulatory accounts, for the legal entity used, to ensure full transparency.
- This includes at a summary level the operating and capital expenditure incurred against allowances set by the Utility Regulator in respective Price Controls.
- Related party transactions and level of debt is also required, to provide an overview on the level of gearing in the organisation
- Other non financial data is also captured as follows:
  - Customer Numbers
  - Type of Connection by Category (Domestic /Commercial)
  - Volume of Gas by Category
  - Type and length of pipe laid
  - Meter Types
  - Public Reported Escapes
- The data taken from cost reporting will provide a more thorough understanding of the costs in the respective companies, on a year by year basis. This information will be used to monitor performance against regulatory allowables and prompt further investigations of any disparities. The information will be useful for formulating Price Controls in the future, as benchmarks will be established.

8.29 The implementation of such a regime will deliver the following benefits:

- **Consistency of Submission**  
A key intention of the cost reporting regime is to impose uniformity and consistency on information submissions.
- **Benchmarking**  
Consistent information submissions will allow us to more easily benchmark the gas companies, both against each other and against their GDN counterparts in GB.

- **Monitoring Against Forecasts and Allowances**

The data collected through the regime will allow us to better monitor actual performance against forecasts and allowances set out in the periodic price control reviews.

- **Increased Accuracy, Clarity and Transparency**

The companies will need to ensure their data collection systems are robust, in order to deliver timely and accurate information required as part of the regime. This will improve data accuracy and clarity.

8.30 The Cost Reporting Pack (CRP) will be the key data capture tool that the companies will populate each year. It will take the form of a spreadsheet template with multiple worksheets. Each company will receive essentially the same template so that the data is collected on a consistent basis. To ensure the integrity of the RRP, all cells contained in the sheets will be locked with the exception of those cells that the companies need to populate. Appropriate colour coding will be used throughout to enhance clarity and understanding.

8.31 We plan to collect cost data as in line with the Regulatory Accounts. This will ensure comparability year on year. We will also collect information on atypical accruals and provisions elsewhere in the RRP, both to confirm that they are atypical and to reconcile back to the regulatory and/ or statutory accounts.

8.32 The accuracy and reliability of the information submitted in the RRP is vitally important. While we expect the companies to apply rigorous standards to the quality of all information they send us, the annual cost reporting process should have a sufficiently high profile within the companies' business such that the systems of control and other governance arrangements are kept under regular review by the directors of the companies to ensure they remain effective.

(c) Electricity

8.33 As part of RP5 the Utility Regulator has initiated annual reporting arrangements for NIE (T&D),

# ANNEXES

## **Annex 1 – Consolidated list of consultation questions**

- Q1. Do respondents consider that this chapter sets out an accurate description of the current position in Northern Ireland?
- Q2. Do respondents consider that we have accurately identified the key elements of the changing policy context which might be applicable to the setting of network price controls?
- Q3. Do respondents agree with the above assessment of the implications of environmental objectives for network price controls?
- Q4. Do respondents agree that the existing ex-ante approach should be retained?
- Q5. Do respondents agree that the duration of network price controls should be five years with a target of a minimum of 3 years for non-network price controls?
- Q6. Do respondents agree with the objectives for incentive design outlined above?
- Q7. Do respondents agree that the Utility Regulator should:
- develop outputs for energy similar to that done for water;
  - link such outputs to our strategic themes; and
  - incentivise initially with reputational incentives with the possibility of financial incentivisation in the longer-term?
- Q8. Do respondents agree with the Utility Regulator's proposal to continue to separate opex and capex allowance and incentives?
- Q9. Do you agree with our proposed approach to minimising bias towards capital expenditure?
- Q10. Do respondents agree that financial incentives remain the primary focus for encouraging efficiency?
- Q11. Do you agree that reputational incentives remain an important component of efficiency incentives for water?
- Q12. Do you agree that reputational incentives should be used initially for incentivising outputs in all sectors with the use of financial incentives considered as work on outputs becomes better developed?
- Q13. Do respondents agree that while incentive symmetry may be a useful starting point any decisions will depend on a range of considerations including customer and stakeholder attitudes and behavioural responses of regulated companies?
- Q14. Do respondents agree with the categorisation of opex above and the proposals to focus incentivisation on the controllable categories (predictable and unpredictable)?
- Q15. Do respondents agree with our proposal to introduce rolling opex incentives for opex out-performance?
- Q16. Do respondents agree with the above proposal for capex incentivisation including:
- introduction in the longer-term an outputs regime linked to rate of return on equity;
  - a robust regime for identifying capex deferral to include potentially annual monitoring of delivery of capex and use of a Reporter in gas and electricity;
  - separate incentive arrangement for replacement capex (repex) and other capex;
  - the introduction of a rolling mechanism (similar to opex) for repex out-performance;

- for other capex, an incentive regime where rewards and penalties for over- and under-performance are confined to within the price control period; and
- consideration of a pass-through mechanism for cost- saving innovations

Q 17. Do respondents agree that, when calculating the cost of capital, the Utility Regulator should continue to depend primarily on the CAPM approach? Do respondents have any views on alternative approaches?

Q18 Do respondents agree with the proposed approach on the use of GB precedents when estimating the cost of capital?

Q19 Do respondents agree to the proposed approach on financeability?

Q20. Do respondents agree with the approach to embedded debt costs outlined above?

Q21. Do respondents agree with the above approach on small company premium?

Q22. Do respondents agree with this description of different types of risk and the scope for mitigation?

Q23. Do respondents agree with our proposals on how to implement risk mitigation?

Q24. Do respondents agree with the categorisation of risk mitigating mechanisms identified above and the proposed principles for their application?

Q25. Do respondents agree with the proposal to extend the concept of a Reporter to the gas and electricity sectors?

Q26. Do respondents agree with the above approach to deferred capex?

## Annex 2 - PC10 Key Outputs

<b>Consumer Service</b>	<b>2009-10</b>	<b>2010-11</b>	<b>2011-12</b>	<b>2012-13</b>
Properties confirmed at risk of receiving pressure below reference level (DG2) alleviated by company action (Note 1).	665	220	300	280
Interruptions to supply – composite score (DG3)	1.14	1.10	1.05	1.01
Interruptions to supply >12 hrs (% of properties) (DG3)	0.225	0.219	0.212	0.206
Properties at risk of flooding – number removed from the risk register by company action (DG5).	-	-	-	200
<b>Consumer Response</b>				
Billing contacts dealt with within 5 working days (% billing contacts) (DG6).	98.0	99.9	99.9	99.9
Written complaints answered within 10 working days (% written complaints) (DG7)	98.0	98.5	98.5	98.5
Bills based on meter readings (% of total metered accounts) (DG8).	95.0	95.0	97.5	98.5
Call handling satisfaction score (1-5)	4.60	4.65	4.70	4.70
Percentage of calls not abandoned (DG9)	99	99	99	99
Percentage of calls not all lines busy (DG9)	99.9	99.9	99.9	99.9
<b>Water Resources</b>				
Security of supply index (maximum 100)	44	77	78	79
Leakage (Mld)	177	173	169	166
Nominated outputs for trunk main schemes (4nr) including schemes carried over from SBP and carrying into PC13. One new abstraction. Completion of reservoir inspection engineer's recommendations. Completion of the Water Resource Management Plan.				
<b>Water Treatment and Distribution</b>				
Mean zonal compliance (MZC) water quality at tap (%)	99.65%	99.70%	99.70%	99.70%
Operational performance indicator (MZC turbidity, iron and manganese) (%)	99.10%	99.10%	99.10%	99.10%
Nominated outputs for water treatment works upgrades completed (2nr), study to				



determine the upgrade for water treatment works (1nr), trunk mains completion and starts (4nr) and completion and work to increase capacity at 13 service reservoirs or clear water tanks.

Activity output of 900km of new, replaced or relined mains over PC10, excluding the trunk mains programme.

<b>Sewerage</b>					
Length of critical sewer renewed or relined over PC10		xx km over PC10			
Length of non-critical sewer renewed		xx km over PC10			

Nominated outputs for improvements to 117 UIDs.

Number of high and medium pollution incidents attributed to NI Water	56	54	51	48
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**Sewage Quality Outputs (Note 2)**

% of WwTWs non-compliant with (Water Order) numeric consents		15.0%	12.3%	9.2%
% WwTWs non compliant (UWWTD consents)		10.2%	7.6%	3.8%
% of WwTW treatment works discharges failing numeric consents		15.4%	12.6%	9.1%
% of total pe served by WwTWs in breach of Water Order consent (LUT)		5.13%	4.02%	1.47%
% of total pe served by WwTWs in breach of UWWTD consent (LUT)		4.27%	3.27%	0.89%

Nominated outputs for improvements delivered by 43 sewage treatment works schemes.

**Asset Serviceability**

All asset areas	Stable	Stable	Stable	Stable
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**Overall Performance Assessment**

OPA score based on 11 service areas included in 2007-08 assessment	137	144	170	203
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- To provide flexibility in the capital programme, the key target will be the delivery of the total number of outputs over the PC10 period. NI Water will be asked to explain any shortfall from the cumulative target to date in its annual reporting to demonstrate that it remains on track to deliver the total output over the PC10 period.*
- An increase in the number of small works with numeric consents in 2010 results in a nominal deterioration in performance from 2009-10*

## Annex - 3 Alternative models for estimating the Cost of Equity

### Dividend Growth Model (DGM)

The DGM assumes that the current share price of a quoted business is equal to the present value of all future expected dividend payments. Therefore, given the current market share price and future dividend growth rate expectations, the cost of equity implicit in the share price can be determined as follows:

$$K_e = (D_0 * (1+g) / P_0) + g$$

Where:

$K_e$  is the post-tax cost of equity

$D_0$  is the current dividend

$g$  is the dividend growth rate (assumed to be constant)

$P_0$  is the current share price

In general the main limitation of the DGM is that it relies on an accurate view of the dividend growth forecasts incorporated in share price valuations. This is problematic because there are no generally accepted sources for these. Short-term estimates are available from the businesses themselves, or are estimated by equity analysts. Neither source provides clear evidence of the growth assumption underpinning share prices.

Perhaps because of this, our regulatory database indicates that the DGM is seldom used as the primary method for estimating the cost of equity in the UK<sup>2</sup>, but instead is sometimes used as a check on the cost of equity derived from the CAPM.

### Fama French Three-Factor Model

Some academic tests of the CAPM have shown that the explanatory power of CAPM does not always perform well. The most prominent contradiction is the “size effect” discovered by Banz (1981)<sup>5</sup>, who found that the average returns of smaller US companies appeared high relative to the returns implied by the CAPM framework. This was further investigated by Fama and French (1993)<sup>6</sup>, who found that two variables, size and book-to-market value, capture most of the variation in stock returns not captured by the CAPM framework. Fama and French proposed the Fama French three-factor model (FFTM) that attempts to adapt the conventional CAPM by adding additional explanatory variables for size and book-to-market value. In particular, under the FFTM:

$$K_e = \beta_i * EMRP + s_i * E(\text{size}) + h_i * E(\text{book/market})$$

Where:

EMRP is the equity market risk premium

$\beta_i$  is the sensitivity of security  $i$  to the EMRP

$E(\text{size})$  is the extra return expected for small capitalisation companies

$s_i$  is the sensitivity of security  $i$  to  $E(\text{size})$

$E(\text{book/market})$  is the extra return expected for companies with high book-to-market ratios

$h_i$  is the sensitivity of security  $i$  to  $E(\text{book/market})$

The FFTM is usually considered when estimating the cost of capital for small or distressed firms. As the model is really an adaptation of the CAPM, for non-distressed firms the most common practice is to extend the CAPM to a two-factor model in which a small company risk premium is added to the conventional CAPM model. This is shown below:

$$K_e = R_f + \beta * EMRP + S$$

Where:

$R_f$  is the risk-free rate

$\beta$  is the equity beta

EMRP is the equity market risk premium

$S$  is the small company premium

A small company risk premium has been used in the past by regulators, including Ofgem, when determining the cost of equity for small companies.

### Arbitrage Pricing Theory

Arbitrage Pricing Theory (APT) extends the three-factor model even further to an unlimited number of explanatory variables and beta coefficients:

$$K_e = R_f + \beta_1 * E_1 + \beta_2 * E_2 + \beta_3 * E_3... + .... \beta_n * E_n$$

Where:

$R_f$  is the risk-free rate

$\beta_i$  is the sensitivity of the security to each of the 1 to  $n$  risk factors

$E_i$  is the expected risk premium associated with each unit of risk for factors 1 to  $n$

In practice, the individual APT variables and associated betas can be seen as a decomposition of the single beta factor of the CAPM. So, for example, although APT theory does not tell us what the APT factors are, typically they are related to systematic macroeconomic variables such as the level of GDP, inflation and interest rates.

### Evaluation of methodologies for estimating the cost of equity

Methodology	Explanation	Advantage	Disadvantage
CAPM	The intuition behind CAPM is that investors are only rewarded for being exposed to non-diversifiable risk (also known as systematic or market risk).	Widely used and applied in valuations.	Empirical tests have found that beta may not be the only variable that has explanatory power.
Dividend Growth Model	The DGM is a simple forward-looking model that assumes that current share prices are equal to the present value of all future dividend payments.	Simple to compute.	Relies on accurate knowledge of dividend growth assumptions underpinning share prices. Cost of equity estimates tend to be highly volatile.
Fama French Three-Factor Model	Some academic tests of CAPM have shown that there may be some mis-specification with regard to size and book-to-market value.  The Fama French Three-Factor Model attempts to compensate for the perceived mis-specification.	Has achieved some empirical support.	In practice, this model is not widely used in its pure form but practitioners may increase the cost of equity in a judgemental way to reflect greater perceived risk for a small company.
Arbitrage Pricing Theory	The principle behind APT is similar to CAPM: investors are incrementally rewarded for incremental (non-diversifiable) risk.	Theory is sound and intuitively appealing.	APT is rarely used because of problems with data availability and remains more of a conceptual academic model than a practitioners' tool.