

Consultation on the revenue forecasting incentive mechanism for AMP6

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1. Overview

This consultation sets out potential approaches for incentivising companies to accurately forecast their revenues, associated with the new forms of revenue-based price controls we are introducing in the next control period.

In the current control period there has been variable performance across companies in terms of revenue forecasting accuracy. We consider that companies can improve their revenue forecasts and that introducing an incentive mechanism will further encourage them to assume accountability for this.

In ‘Setting price controls for 2015-20 – final methodology and expectations for companies’ business plans’¹ (our ‘final methodology statement’), we confirmed the introduction of separate wholesale and retail price controls. Part of the reason for this change was to help improve both the focus on and the transparency of the different revenue components of customers’ bills, as well as break the automatic link between retail price inflation and allowed retail service revenues. We specified that, as a result of this, the form of the controls would be different in each case (as set out in table 1). This will also alter the way we monitor compliance with the new forms of control from the approach used for the integrated ‘tariff basket’ form of control that is currently in place.

Table 1 Form of control summary

	Form of control
Wholesale controls (water and wastewater)	Based on total allowed wholesale revenues
Household retail control	Based on average revenues per connection (and type)
Non-household retail control	Average revenues limited by default tariffs for each customer band

In our final methodology statement, we also proposed to use different mechanisms to adjust companies’ allowed revenues to take account of differences between actual and projected demand from previous years, to reflect the different forms of control we are putting in place. This will allow companies to be flexible by responding to the

¹ ‘Setting price controls for 2015-20 – final methodology and expectations for companies’ business plans’, Ofwat, July 2013.

variances in their revenues while also safeguarding customers from unexpected bill changes. This consultation sets out the detail of the proposed new approach for the wholesale controls: the wholesale revenue forecasting incentive mechanism (WRFIM), and discusses the options for application to the retail controls.

For the 2014 price review (PR14), we intend to bring about a step change in how water companies can generate reward. In [‘Setting price controls for 2015-20 – risk and reward guidance’](#)² (our ‘risk and reward guidance’), we confirmed that our final methodology is designed to ensure that the new price controls provide a good alignment of risk and reward between customers and companies, including improved opportunities for companies to retain a share of outperforming their business plan expectations, provided the benefit is also shared with customers. We also want to ensure that, in the process, demand risk is shared more fairly with current customers and not all shifted to customers in the future. Accurate demand and revenue forecasts are essential to provide transparency on how rewards are generated and shared between current and future customers.

1.1 Summary of proposed wholesale revenue forecasting incentive mechanism (WRFIM)

We propose a new WRFIM in order to better incentivise companies to improve their revenue forecasting within the new more flexible wholesale revenue controls. Wholesale costs are the most important components of customers’ bills. Therefore, improving forecasting of wholesale revenues will benefit both companies and customers. The purpose of the proposed mechanism is to reduce the impact of deviations on customer bills arising from revenue forecasting deviations by:

- adjusting companies’ allowed revenues for each year to take account of differences between actual and projected revenues; and
- incentivising companies to avoid revenue forecasting errors through applying a penalty to variations that fall outside a set uncertainty band (or ‘revenue flexibility threshold’).

Based on historic performance across the existing control period (AMP5) and on precedents set by other regulators, we are considering a mechanism for the wholesale controls that includes the following parameters.

² ‘Setting price controls for 2015-20 – risk and reward guidance’, Ofwat, January 2014.

Table 2 WRFIM parameters

Parameters	Level
Symmetric revenue flexibility threshold	2% of annual allowed revenue
Penalty	3% of the full over-/under-recovery where the revenue flexibility threshold is exceeded
Threshold for initiating further investigations	6% of annual allowed revenue

We recognise that there may be unexpected and exceptional circumstances during the regulatory period which are not within the range of typical business planning risks remunerated by allowed returns. Likewise, company business plans include a range of different performance commitments and delivery incentives that are also aimed at allocating risks between the company and customers, which we will be considering for inclusion in price controls. For this reason, our proposed approach is not mechanistic. We will retain our discretion in applying any penalty where companies provide convincing evidence of relevant exceptional circumstances in their annual regulatory reporting.

1.2 Summary of proposed approach to retail revenue adjustments

We are also considering options for applying a comparable revenue forecasting incentive mechanism to the household retail control in order to align forecasting incentives between the controls.

Unlike the services covered by the wholesale price controls, deviations in retail service revenues are more affected by the number and type of connections, which we acknowledge cannot always be forecast with high confidence (given companies' supply obligations) over the price control period.

For non-household retail customers, we consider a similar pre-set incentive mechanism would be inappropriate as customers are protected by the form of control which limits the average retail service revenues on a per customer basis from each default tariff in each customer band. In England, the introduction of competition over time will also safeguard customers from potential bill increases arising from demand variations.

However, an RFIM mechanism may be more relevant for household retail services, although there is a need to ensure proportionality. Therefore, we are considering two potential options to address revenue variances for the household retail control.

Table 3 Household retail options

	Household retail mechanism
Option 1	No forecasting incentive is applied and a true-up is made in the next price control period for any over-/under-recovery in allowed revenue (as now).
Option 2	A comparable incentive mechanism is applied to household retail revenues, alongside its application to allowed wholesale revenues, taking into account the fact that annual allowed revenue will in any event be adjusted to incorporate the change in connections.

At this stage, we are less convinced of the need for a complementary household retail forecasting incentive mechanism given the different form of control that will be in place, but are interested in respondents' views.

2. Consultation questions

We are seeking respondents' views on a number of specific questions, set out below. As well as responses to these specific questions, we welcome views from stakeholders on any of the issues we raise in this document.

Q1 Do you agree with the need for a revenue forecasting incentive in AMP6?

Q2 Do you have any comments on our proposed approach to the wholesale revenue forecasting incentive mechanism (WRFIM)?

Q3 Do you agree with a revenue flexibility threshold of +2%/-2% of adjusted allowed revenue for the wholesale water and wastewater controls? Please provide supporting evidence and analysis should you wish to propose a different level of flexibility.

Q4 Do you agree with a penalty rate of 3%? Please provide supporting evidence and analysis should you wish to propose a different penalty rate.

Q5 Do you agree with the use of a separate revenue forecasting incentive mechanism in the retail control? If so, do you agree with the use of an equivalent mechanism as in the wholesale control, with the same parameters?

Q6 Do you agree with the proposed cap and collar mechanism as a trigger to further investigation to provide additional safeguards to customers?

Q7 Do you agree we could additionally use the WRFIM to incentivise accurate projections of revenues for 2014-15 in our final determinations?

Q8 Do you have any comments in relation to the details and mechanics of the iteration process?

The rest of this document provides more detailed information behind the proposed mechanisms and processes on which we are seeking views. Table 4 below summarises the areas of further information that are covered.

Table 4 Summary of this document

Area	Summary	Where you will find further information
Background	Background and reasoning behind applying a WRFIM.	Appendix 1
WRFIM	Outlines our methodology for deriving the WRFIM and describes how the mechanism will work.	Appendix 2
Retail mechanisms	Outlines the potential mechanisms that could be applied to retail revenue.	Appendix 3
Additional issues	Discusses our proposals on additional supporting safeguards that we would be putting in place, along with our proposals for a complementary approach for incentivising the accuracy of 2014-15 revenue projections variations.	Appendix 4
RFIM annual iteration process	Provides an outline of annual timelines that would be used for applying the WRFIM.	Appendix 5
Illustrative examples	Case studies illustrating the mechanism for wholesale and household retail revenues.	Appendix 6
Historical variations	Provides analysis of historical variations in companies' revenues in AMP4 and AMP5 which have been used to help inform the proposed revenue flexibility thresholds.	Appendix 7

3. Responding to this consultation

We welcome your responses to this consultation by **4 June 2014**.

You can email your responses to price.review@ofwat.gsi.gov.uk or post them to:

'Revenue forecasting incentive mechanism for AMP6' consultation
Markets and Economics Division
Ofwat
Centre City Tower
7 Hill Street
Birmingham B5 4UA.

We will publish responses to this consultation on our website at www.ofwat.gov.uk, unless you indicate that you would like your response to remain unpublished.

Information provided in response to this consultation, including personal information, may be published or disclosed in accordance with access to information legislation – primarily the Freedom of Information Act 2000 (FoIA), the Data Protection Act 1998 and the Environmental Information Regulations 2004.

If you would like the information that you provide to be treated as confidential, please be aware that, under the FoIA, there is a statutory 'Code of Practice' which deals, among other things, with obligations of confidence. In view of this, it would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information, we will take full account of your explanation, but we cannot give an assurance that we can maintain confidentiality in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on Ofwat.

Appendix 1: The case for a wholesale revenue forecasting incentive mechanism

A1.1 Background

Our final methodology statement confirmed the introduction of separate wholesale and retail price controls. In addition, we specified that the form of the controls would be different in each case.

- The wholesale controls would be based on total allowed wholesale revenues.
- The retail household controls would limit allowed retail revenues based on average revenues per connection (and type).
- The non-household revenues would be limited by default tariffs for each customer band.

These changes in the form of price controls mean we must alter the way we monitor compliance with each control from the integrated 'tariff basket' form of control that is currently in place.

We recognise that, in practice, companies' actual revenues will differ from their allowed revenues in a given year, because it is difficult to project actual customer demand with precision, particularly when setting price limits over the whole of a five-year price control period.

To address this issue in AMP5 (2010-15), we put in place the revenue correction mechanism (RCM) to reconcile companies' actual revenues with their allowed revenues at the end of the price control period. Any variation from the allowed revenue is then recovered in future allowed revenues in the following price control period. We set out how we will be applying this mechanism at PR14 in our final methodology statement; and in ['Setting price controls for 2015-20 – further information on reconciling 2010-15 performance'](#)³, we provided further details on the updated business plan information companies must submit for this purpose.

From April 2015, for the separate price controls, we propose to use adapted mechanisms to adjust companies' allowed revenues for each year to take account of differences between actual and projected demand from previous years, to reflect the different forms of control we are putting in place. These adapted mechanisms will

³ 'Setting price controls for 2015-20 – further information on reconciling 2010-15 performance', Ofwat, April 2014.

give the companies more scope to smooth changes from unexpectedly high or low demand (relative to the projections made in their business plans) over time, with fewer constraints on pricing adjustments being created by the regulatory decisions made at the periodic price review.

This additional pricing flexibility will be subject to the new framework of compliance with charging rules provided for by the UK Government's Water Bill. We expect to consult on this shortly after the Bill receives Royal Assent. In particular, we expect the new charging rules will provide additional consumer safeguards in relation to the amounts by which individual charges covered by price controls can be changed in a given year.

Our proposed forms of control and associated adjustment mechanisms in this document are also designed to share annual demand forecasting risks with current customers more effectively, rather than transferring all these forecasting risks to future customers after the next price review (in 2019), as is the case with the RCM.

Also, in our final methodology statement, we explained that we had decided on the need for an incentive for accurate annual revenue forecasting for the wholesale price controls, such that companies that fail to forecast their wholesale revenue requirements accurately should be penalised when recovering allowed revenues which were different to an agreed threshold level through subsequent adjustments in prices.

In our final methodology statement, we said that we would consult further on the details of such incentives at the time of our draft determinations, having considered companies' business plans in our risk-based review. This consultation sets out our proposals for incentivising accurate demand forecasting as part of our new approach to revenue adjustments in connection with the new forms of control.

A1.2 The case for a wholesale revenue forecasting incentive mechanism

We plan to replace the RCM with a new wholesale revenue forecasting incentive mechanism. The WRFIM will affect how allowed revenues are recovered as a result of differences between forecast and actual revenues in a given year. Therefore, they will provide greater incentives on companies to forecast revenues accurately. We explain the basic need for these additional incentives below.

We have explained that additional charging flexibility within the wholesale and retail controls on allowed revenues should mitigate the risk for substantial annual revenue over-/under-recoveries. A decrease (increase) in actual revenues collected from charges due to unexpected lower (higher) demand could be compensated by consequential charge adjustments, as water companies are able to take advantage of the low responsiveness of demand to relatively small changes in charges, particularly for their non-contestable wholesale and retail services.

But we need to safeguard against a potential risk that companies could misuse this additional flexibility within the new forms of price control to transfer allowed revenue between years in ways that are not aligned with customers' interests. Also, our analysis in the risk-based review of some large deviations from forecast revenues at the 2009 price review (PR09) highlighted a risk that large amounts of allowed revenue can be moved between entire price control periods under the current form of RCM. This can increase the risk of there being significant impacts on the prices that customers pay for regulated water services in these different price control periods, and hence potentially affect inter-generational equity.

We think that a mechanism that adjusts wholesale revenues more smoothly within each control period, to adapt to evolving changes in demand from business plan forecast levels, if required, may be a more appropriate approach to revenue correction than the existing process, given the different and more flexible forms of control we are putting in place.

We also think that there is a strong case for an incentive on companies to forecast wholesale revenues more accurately. In the risk-based review, we observed some business plan revenue projections for the remainder of the current price control period, relevant to the existing RCM mechanism, which appeared to be inconsistent with our expectations.

Where forecasts in business plans are not met in reality, we would expect some of the deviations in variables, such as demand and turnover, would typically follow a fan shape around the central projections in business plans. This is because, as time passes, we would expect the impacts of some sources of deviation to compound year-on-year, to increase the difference between actual and forecast levels over the control period. This implies that, in general, companies should be able to predict their revenues in the earlier years of a price control period more accurately (within a narrow range of deviation) than in later years.

However, figure 1 presents the wholesale water revenue forecasting errors, by company and year of the price control, observed during AMP5⁴ and illustrates this was not always the case.

Figure 1 AMP5 wholesale water revenue forecasting error as a percentage of annual turnover by company

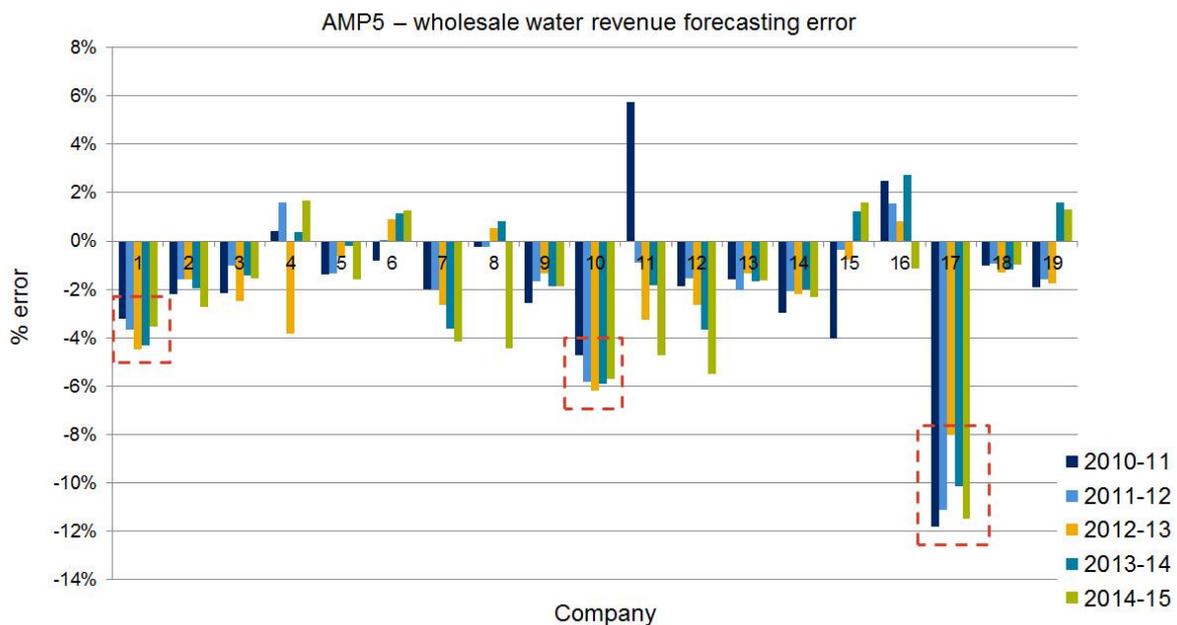


Figure 1 indicates that, while the deviations for some companies generally increased for later years as we might expect, and were in some cases all within 2% of the original business plan projections, there have also been some cases of significant and relatively constant revenue forecasting errors throughout the whole of the price control period (for example, as highlighted in the red rectangular boxes). These differences occurred even when a number of common external factors (including underlying changes in macroeconomic circumstances) were being felt across the water sector within this period.

The result of these cumulated deviations from the original business plans will create a significant inefficiency in relation to future charges faced by customers. Some future customers will now have to cover for the significant shortfall in the recovery of allowed revenues as a result of demand variations that actually occurred between 2010 and 2015 through higher prices after April 2015.

⁴ 2014-15 figures are forecasted values for the differences between currently expected versus originally forecasted revenues.

Therefore, we think that better incentives on companies, aligned to the new forms of control being used in the next control period, are necessary to encourage them to avoid similar sustained forecasting errors occurring in the future where possible. We propose that in AMP6, this incentive is the WRFIM. We discuss the detailed design of the mechanism as it would apply to the wholesale revenue controls in the following appendix, before considering aligned options for the retail forms of control.

Consultation question

Q1 Do you agree with the need for a revenue forecasting incentive in AMP6?

Appendix 2: How the wholesale revenue forecasting incentive mechanism will work

In this appendix, we describe the design of the proposed WRFIM, together with the basis for our proposed parameters for the mechanism. We consider whether the same mechanism and parameters are applicable for retail controls in appendix 3.

The proposed design takes into account several considerations, including:

- RCM performance over AMP5, as described in section A1.2;
- an analysis of the potential impact of the proposed mechanism for AMP6 on companies' revenues, given our new form of wholesale controls; and
- the relevance of a number of regulatory precedents for similar mechanisms in the electricity, gas and airport sectors for the type and level of forecasting incentives that would be appropriate.

A2.1 How the proposed mechanism will work

We will specify allowed revenues for wholesale water and wholesale wastewater services for each year of the control period in our final determinations. These will be determined by the Retail Prices Index (RPI) and the 'K' factors we set.

At the end of each charging year, we will compare the allowed revenue for each wholesale service that year with the revenues companies recover in that year. Companies will be able to recover from customers (redistribute to customers) any shortfall (over-recovery) with a two-year lag, determined by the annual reporting and charging cycles.

That is, the adjustments we make resulting from comparing allowed and actual wholesale revenues in the charging year (t-2) will first be reflected in charges set in the charging year (t). This means that the adjustments arising from deviations in 2018-19 and 2019-20 will still be reflected in price limits set for the next price control period (AMP7), on a similar basis to the RCM at present.

We are also proposing to apply a penalty interest rate⁵ to larger deviations between actual wholesale revenues and total allowed wholesale revenues in each year, to incentivise accurate forecasting of revenues. This penalty will only apply if a company's actual wholesale revenues fall outside a pre-determined threshold ('uncertainty band') around their forecasted levels in a given year. The threshold will apply symmetrically, such that actual revenues that are both higher and lower than those forecasted will face a penalty rate outside the uncertainty band.

However, we are mindful that an unduly mechanistic approach to applying such a penalty on an annual basis could penalise companies that have been affected by significant unexpected circumstances beyond their control (for example, a successive number of dry or wet years or significant planning delays affecting a large number of new connections), and potentially create an inefficient allocation of risk with customers.

For this reason, the nature and size of any adjustment to allowed wholesale revenues as a consequence of the WRFIM will be communicated to companies in advance during the charging year (t-1) after the deviations in the relevant year (t-2) are known and reported. Before we confirm any WRFIM adjustments to allowed revenues, companies will have an opportunity (in their annual risk and compliance statements in support of their regulatory accounts) to explain to Ofwat the reasons for the larger over-/under-recovery of revenue. We then intend to retain our discretion in applying the penalty rate if there is suitable evidence provided to us that the circumstances driving the deviations concerned have been genuinely beyond the control of efficiently-managed companies.

A2.2 Revenue forecasting incentive formula

For each charging year of AMP6, we propose the WRFIM in year t ($WRFIM_t$) would be based on the following basic formula when it is applied to adjust the allowed revenue in the year t for the total revenue controls for each wholesale service (that is, water and wastewater).

$$WRFIM_t = - \left\{ (RR_{t-2} - AR_{t-2}) \times \left[1 + \left(\frac{I + PR}{100} \right) \right] \times \left[1 + \left(\frac{I}{100} \right) \right] \right\} \times (1 + RPI_{t-1}) \times (1 + RPI_t)$$

⁵ In our final methodology statements, we refer to this as the 'high rate of interest'.

Where:

- RR_{t-2} The **wholesale revenue recovered** in charging year t-2, with the first year subject to the adjustment beginning in 1 April 2015.
- AR_{t-2} The **allowed wholesale revenue** in charging year t-2, with the first year subject to the adjustment beginning in 1 April 2015, and with the allowed wholesale revenue from the charging years beginning 1 April 2017 being adjusted by the WRFIM for that year.
- I The **specified discount rate**.
- PR The **penalty rate**, taking a positive value if $RR_{t-2} > [(1 + RFT) \times AR_{t-2}]$, a negative value if $RR_{t-2} < [(1 - RFT) \times AR_{t-2}]$, or else being equal to 0.
- RFT **Revenue flexibility threshold**.
- RPI_t **Retail Prices Index** used for wholesale price controls for year t as specified in condition B in the licence.

Based on this formula, we propose that any over- or under-recovery of allowed revenue in charging year (t-2) will be used to adjust the allowed wholesale revenue in charging year (t) by adding the $WRFIM_t$ amount as defined above, to the allowed revenue in charging year t, which will then form the updated level of allowed revenues to which recovered revenues will be compared.

In this way, companies would have a more sustained incentive to adjust their actual revenues to comply with the controls on allowed wholesale revenues on an annual basis, as there is more likelihood of a penalty persisting the longer that actual annual wholesale revenues remain significantly different from the allowed levels, and the longer companies do not adjust charges to deal with previous years' over- or under-recoveries.

The annual adjustments to allowed wholesale revenues would not create a requirement for companies to make large adjustments to actual charges or bill profiles for individual customers from year to year (by any more than the existing RCM) – but would sustain more effective incentives to avoid large deviations from the profile of total allowed wholesale revenue recovery set out in their business plans.

If the over- or under-recovery of wholesale revenue in a given year fell within the revenue flexibility threshold, a company's allowed revenue in charging year (t) will be adjusted by the over-/under-recovery multiplied by the company's specified discount rate squared and uplifted for inflation, to account for the two-year time lag.

We will also make an additional adjustment after reviewing actual wholesale revenue received over all five years. This will ensure that the real present value of allowed wholesale revenue over the control period would remain unchanged by deviations between actual and forecast revenues (as set out in our final determinations) in each year, as long as the specified discount rate was the weighted average cost of capital (WACC) used to set allowed wholesale service revenues in our final determinations. (In our risk and reward guidance, we explained that we expect the WACC to be 3.7% in real vanilla terms). This replicates the existing principle of the RCM, but with annual adjustments, which smooth variations and should enable a smaller adjustment after the control period.

For actual annual wholesale revenue deviations that fall outside the revenue flexibility threshold, a penalty rate will be applied in addition to the company's specified discount rate for the year of deviation beyond the threshold concerned.

The application of the penalty rate increases the reduction to allowed wholesale revenues in charging year (t) if the company has over-recovered in charging year (t-2) but if the company has under-recovered in charging year (t-2), the penalty rate will reduce the addition to allowed wholesale revenues in charging year (t). In this way, the penalty rate disincentivises poor revenue forecasting symmetrically, helping to encourage companies to set smoother bill profiles over time.

Although we focused on incentivising the avoidance of over-recoveries in our final methodology statement, the business plan data set out in figure 1 illustrates that, in fact, smoother bill profiles can be threatened by both upward and downward variations in demand and recovered revenues. This can occur, for example, when the nature of exceptional weather changes within the period. A more symmetric framework helps companies manage these risks more efficiently themselves, without resorting to unexpected changes to bill profiles over the medium term. In appendix 6, we set out illustrative worked examples of how this formula would be applied.

Consultation question

Q2 Do you have any comments on our proposed approach to the wholesale revenue forecasting incentive mechanism (WRFIM)?

A2.3 Proposed parameters

Here, we set out the approach we have used to establish our proposals for the sizes of the two key WRFIM parameters discussed above – the revenue flexibility threshold and the penalty rate.

For the revenue flexibility threshold, we have analysed companies' historical performance in recovering allowed revenues over the ten years of AMP4 and AMP5 (including their latest business plan projections for their revenues in 2013-14 and 2014-15). This has allowed us to assess an appropriate tolerance corridor for revenue forecasting for both water and wastewater wholesale revenue controls, which we use to propose a threshold level for WRFIM in AMP6.

To set an appropriate penalty rate, we have used a combination of regulatory precedent where similar mechanisms have been applied, and a sensitivity analysis to understand the potential impacts of different penalty rate levels on water company financial outcomes.

We note that the basis of appropriate WRFIM parameters would not necessarily be appropriate for an RFIM for the retail controls. We discuss options for the retail controls in appendix 3.

A2.3.1 Revenue flexibility thresholds

To derive our proposed revenue flexibility threshold, we have analysed the variation of actual annual regulated revenues from those anticipated in our final determinations in AMP4 and AMP5 for the water and wastewater services. Ideally, this analysis would have been supported by an understanding of the nature, materiality and causes of these historic revenue deviations. But as the relevant data (volume and prices for all customer categories) was not consistently reported across the whole time period concerned, we focused on understanding the extent and variability of the aggregate revenue deviations over time. We examined deviations for all companies in all years for both wholesale services.

Tables 5 and 6 below summarise the relevant sample statistics for the water and wastewater analyses respectively (we have presented the raw data as histograms in appendix 7). The tables show both unadjusted and adjusted results. In the adjusted set, we have eliminated the effects of particular outliers, which for the purpose of this analysis, we have taken to be any observation exceeding two standard deviations from the unadjusted sample mean.

Table 5 Key sample statistics for wholesale water over-/under-recoveries

Statistics	Water	Statistics	Water	Statistics	Water
AMP4 (unadjusted)		AMP5 (unadjusted)		AMP4 and 5 (unadjusted)	
average	-0.47%	average	-2.03%	average	-1.34%
stdev	3.37%	stdev	2.89%	stdev	3.20%
n	75	n	95	n	170
AMP4 (adjusted)		AMP 5 (adjusted)		AMP4 and 5 (adjusted)	
average	-0.65%	average	-1.64%	average	-1.38%
stdev	2.78%	stdev	1.97%	stdev	2.17%
n	71	n	89	n	156

Table 6 Key sample statistics for wastewater for wholesale wastewater over-/under-recoveries

Statistics	Wastewater	Statistics	Wastewater	Statistics	Wastewater
AMP4 (unadjusted)		AMP5 (unadjusted)		AMP4 and 5 (unadjusted)	
average	0.73%	average	-1.28%	average	-0.28%
stdev	2.72%	stdev	2.29%	stdev	2.71%
n	50	n	50	n	100
AMP4 (adjusted)		AMP 5 (adjusted)		AMP4 and 5 (adjusted)	
average	0.86%	average	-1.28%	average	-0.28%
stdev	2.39%	stdev	2.07%	stdev	2.57%
n	47	n	48	n	98

The results indicate that the average annual forecast error for water (adjusted standard deviation) varies from 1.97% (for AMP5 years) to 2.78% (for AMP4 years) and from 2.07% (for AMP5 years) to 2.39% (for AMP4 years) for wastewater. Both water and wastewater results exhibit annual forecasting errors of similar magnitudes. Therefore, we consider it appropriate to set a revenue flexibility threshold (RFT) factor at the same level for both water and wastewater companies.

While these historic variations are informative, there are at least two new factors in AMP6 that are likely to have a positive impact on companies' ability to forecast actual wholesale revenues more accurately. These are set out in table 7 below.

Table 7 Selected factors impacting companies' ability to accurately predict wholesale revenues in AMP6

Factor	Impact
Pricing flexibility	The different form of control is likely to allow companies to control demand risk better within AMP6, as pricing flexibility (and relatively inelastic demand) will allow deviations in demand trends to be compensated for on an ongoing basis through charge adjustments. We currently approve charges directly, but we expect new charging rules under the framework envisaged in the Water Bill to enable us to determine whether it is appropriate to provide companies with some more discretion to adjust charges up and down in line with underlying changes in costs and demand for wholesale services, subject to compliance with these rules and their existing licence and other obligations.
Metering penetration	The increases in metering penetration over AMP5 and expected in AMP6 by many companies in their business plans should provide companies with improved information and capabilities to manage demand and adjust associated projections over time.

These factors should improve the ability for companies to forecast and then manage their revenues year by year. This should reduce the efficient level of flexibility required by companies in the five-yearly price controls to deal with unanticipated changes in underlying demand for the services concerned, compared with the existing framework. With this in mind, we propose to set revenue flexibility thresholds in the price controls slightly above the adjusted average annual variances observed historically but slightly below the historic standard deviations of these variances across all companies and price control years. The proposed thresholds on this basis are:

- **2%** of annual adjusted allowed revenue for wholesale water; and
- **2%** of annual adjusted allowed revenue for wholesale wastewater.

As we indicated in appendix 1, the level of flexibility actually allowed for annual changes to the charges to final wholesale and retail customers will be in scope for the charging rules which are envisaged by the UK Government's proposals in the Water Bill. We expect to consult on these rules shortly after the Bill receives Royal Assent.

Consultation question

Q3 Do you agree with a revenue flexibility threshold of +2%/-2% of adjusted allowed revenue for the wholesale water and wastewater controls? Please provide supporting evidence and analysis should you wish to propose a different level of flexibility.

A2.3.2 Penalty rate

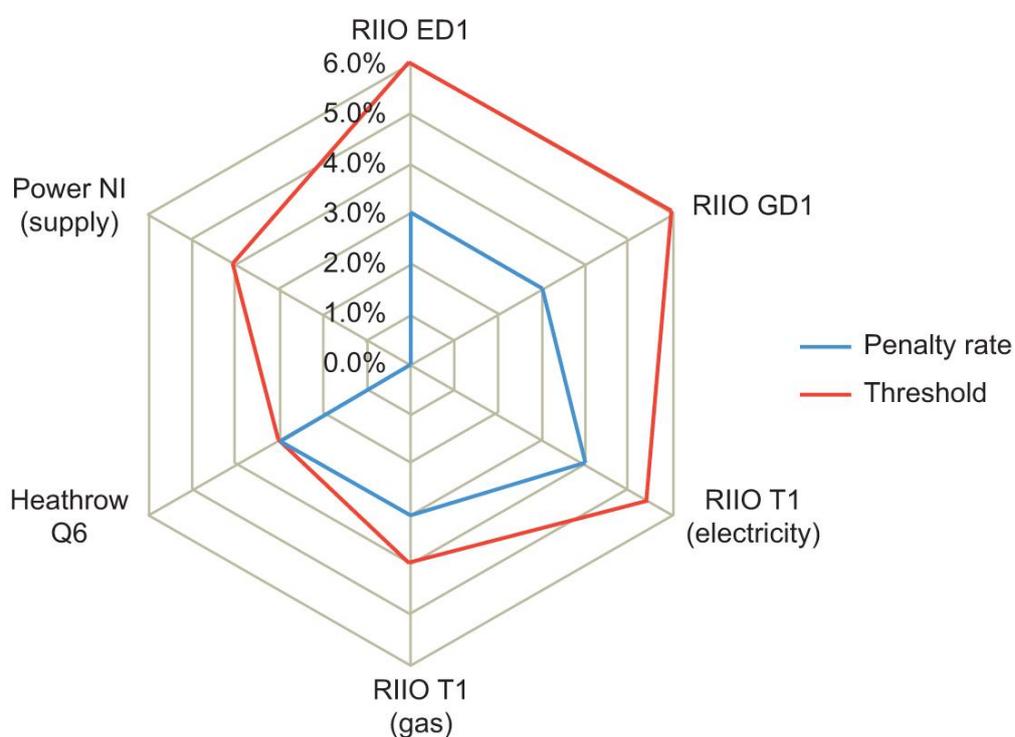
To safeguard customers in light of the proposed annual allowed wholesale revenue flexibility described previously, and to encourage accurate forecasting, we intend to add a penalty rate (PR) to the NPV calculation used to compute the allowed annual revenue adjustments.

The penalty rate would apply symmetrically – in both of the following two cases.

- If, in respect of charging year $t-2$, RR_{t-2} exceeds AR_{t-2} by more than the RFT factor.
- If, in respect of charging year $t-2$, AR_{t-2} exceeds RR_{t-2} by more than the RFT factor.

The use of penalty rates to incentivise accurate projections is consistent with the regulatory precedent in other sectors. Figure 2 provides an overview of the penalty rate precedents in the relevant examples considered. It also shows the revenue flexibility thresholds, beyond which regulatory intervention may be required (this is distinct from the revenue flexibility threshold we propose in the previous section, below which no penalty would be applied).

Figure 2 Revenue forecasting incentive regulatory precedent



We intend to set the penalty rate to **3%**. This choice is based on the regulatory precedent set out above and it is broadly comparable to the wholesale WACC figure of 3.7% we set out in our risk and reward guidance.

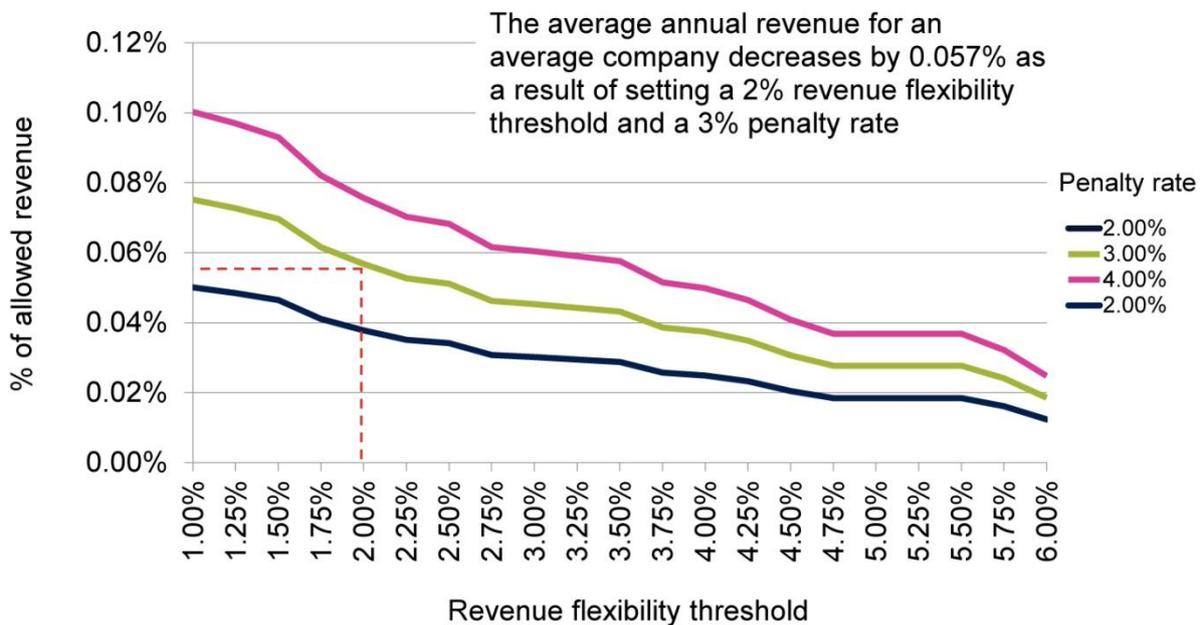
While there is precedent for such a rate from other regulatory frameworks, we also carried out sensitivity analysis to understand the potential impact of such a level of penalty rate in the water sector.

For this purpose, we examined the impacts of different levels of penalty rates on allowed revenues, had the proposed mechanism been introduced during AMP5, given the extent of annual revenue variations experienced by companies in this period. This analysis focused on the specific impact of the penalty rate (that is, it excluded the adjustments required to ensure the present value of allowed revenues would be preserved in light of annual variations, through applying the specified discount rate term in the WRFIM).

Figures 3 and 4 below show the predicted industry average annual penalty as a percentage of annual turnover, based on AMP5 historic data, for combinations of given penalty rates and flexibility thresholds. It can be seen that, based on our proposed flexibility threshold of +/-2%, setting the annual penalty rate at 3% would have resulted in reductions to the average annual allowed wholesale revenues of 0.057% and 0.053% for the average water and wastewater company, respectively, had these rates been applied to the variations experienced in AMP5.

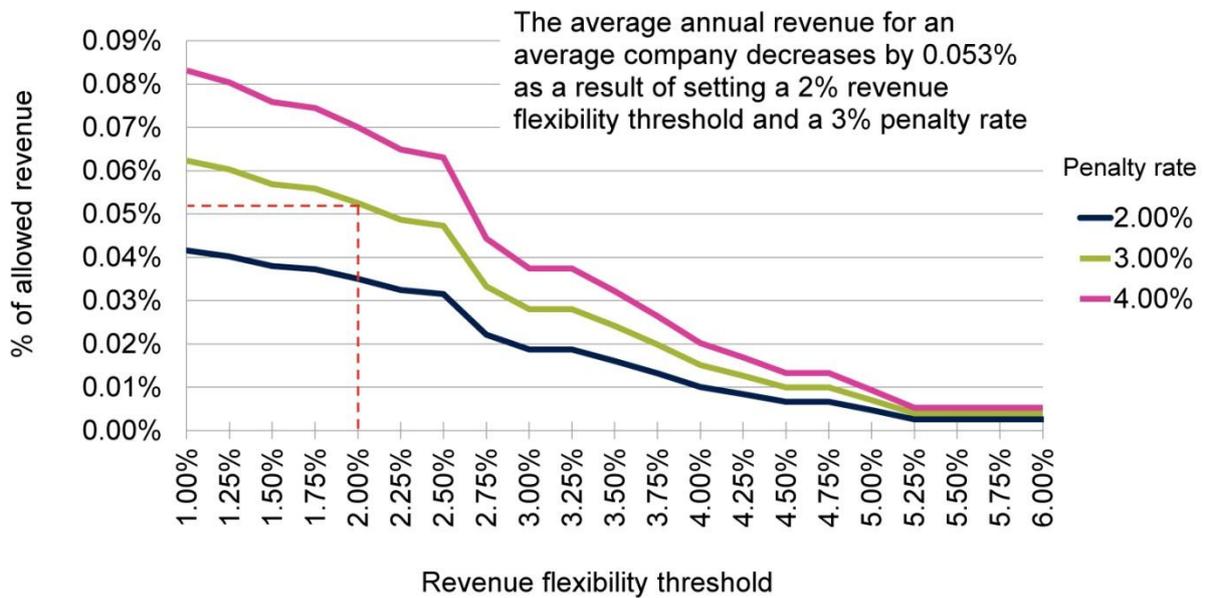
In the context of our risk and reward guidance, these represent less than 0.1% of the expected RoRE. Hence, they represent a modest but meaningful financial incentive to ensure that future revenues are not collected through significant deviations in average price levels from those set out in companies' business plans (following customer engagement). With a higher revenue flexibility threshold, the effectiveness of the incentive would fall significantly (as most variations would not lead to allowed revenue impacts), and a similarly significant incentive reduction would also occur with a lower penalty rate⁶.

Figure 3 Average annual penalty as % of allowed wholesale water turnover



⁶ For example, the figures indicate that a penalty rate of 2% could reduce the incentive by broadly as much as increasing the variability threshold to around 4.5% for water and 3% for wastewater.

Figure 4 Average annual penalty as % of allowed wholesale wastewater turnover



It is important to note that the values illustrated above represent average figures for the annual variations observed in the sector, and that the financial impact of the mechanism could be higher for those individual companies that significantly over- or under-recover their annual allowed wholesale revenues over the five-year regulatory period. However, as indicated above, we consider that the more flexible form of price controls should enable companies to manage these demand and revenue risks more effectively in the coming control period. So it is also possible that few companies would trigger the financial incentive effects in the WRFIM at all.

Consultation question

Q4 Do you agree with a penalty rate of 3%? Please provide supporting evidence and analysis should you wish to propose a different penalty rate.

Appendix 3: Retail revenue adjustment options

As well as the proposed WRFIM, we have considered whether we should, in principle, include similar mechanisms for the retail controls to align forecasting incentives. While wholesale revenues are more affected by weather variations from year to year, both retail and wholesale revenues are affected by the number and type of connections, which cannot always be forecast with high confidence (given companies' supply obligations).

However, we recognise the substantial difference in both the form and relative materiality for customers' final bill profiles of the different controls.

For non-household customers, the form of control protects them by limiting the average retail service revenues per customer that companies can collect from default tariffs in each customer band. So it limits the gross retail margins that companies can make from different customer types, and these limits will be less affected by the total number of customers that are serviced from year to year.

Also, for non-household customers in England, we expect the introduction of competition over time to further limit the potential for bill increases, and companies should not be protected from effective competition through the assurance of particular revenue allowances in this market segment. For these reasons, we think it would be inappropriate to use a mechanism of the form set out for the wholesale controls to incentivise accurate revenue projections for non-household retail services – these are commercial risks that companies should manage, without regulatory protection of allowed revenues.

But for companies serving non-household customers wholly or mainly in Wales, competition is not due to be introduced and so there may be an argument for adapting a mechanism depending on the approach for household retail revenues (analogous to our adapting our proposals for the SIM in Wales).

For household customers, companies will see automatic adjustments in total allowed retail revenues in line with unexpected variations in the numbers of connections they must serve in each year, given the form of average cost to serve (ACTS) control we are putting in place. Accordingly, the form of control already deals with a key source of demand risk for providing household retail services in a different (and offsetting) way to the wholesale controls.

Depending on the relative variability of costs with connections within the control period, as between the activities funded by the wholesale and retail household controls, demand risks may therefore be allocated between companies and customers somewhat differently for the wholesale and household retail controls in any event. So, it may be difficult to ensure fully-aligned forecasting incentives for the same demand risks through exactly the same form of forecasting incentive mechanism.

The relative sizes of the revenues affected by unexpected connection variations between the two types of control are also relevant. In total for the sector, based on the December business plans, companies' revenues from retail household controls could be around 14% of wholesale control revenues (for the average water company). This difference means that relatively small deviations between forecast and actual recovered revenues from wholesale services due to connection variations will outweigh larger deviations in the revenues collected from retail service provision arising from the same connection variations.

Therefore, there is a question over whether including a comparable type of mechanism to incentivise the accurate projection of household retail revenues is necessary and proportionate in practice, given that the allowed retail revenues will automatically adjust for connections variations in any event, without particular implications for customers' average bills over time.

However, we have illustrated how a retail incentive mechanism could potentially operate for household services using the same basic parameters (including the specific discount rate) as set out above for the WRFIM, using a simple worked example. We have contrasted this illustration with an alternative of simply allowing the over- or under-recovered value of allowed revenues to be reflected in adjusted price limits in future years (as with the existing RCM) with no penalty incentive.

These illustrative examples are set out, alongside those illustrating the WRFIM, in appendix 6. The key approaches can be summarised as follows.

- **Option 1** – no RFIM mechanism applied to household retail revenues; instead, a simpler adjustment has been made to deal with the true-up in the value of the over-/under-recovery in allowed revenues. This adjustment will be made at the next price control review (as with the existing RCM).

- **Option 2** – the same type of incentive mechanism applied to household retail revenues. While this would be aimed at incentivising accurate forecasting, so that annual over-/under-recovery outside of a flexibility corridor is penalised, the penalty would typically be very low for these revenues for modest annual deviations, and may represent an ineffective additional incentive given a key relevant demand uncertainty is common to the wholesale controls.

Based on this analysis, we are less convinced of the need for a complementary retail incentive mechanism (option 2) but are interested in respondents' views, which we will take into account in finalising our proposals for reporting and reconciliation of allowed revenues under the different price controls in August.

Consultation question

Q5 Do you agree with the use of a separate revenue forecasting incentive mechanism in the retail control? If so, do you agree with the use of an equivalent mechanism as in the wholesale control, with the same parameters?

Appendix 4: Additional issues

A4.1 Company variations

As discussed above, we are mindful that an unduly mechanistic approach to applying the WRFIM set out above could penalise companies that have been affected by significant unexpected circumstances beyond their control. This is because these circumstances (for example, a successive number of dry or wet years not in line with historical trends) may not be within the range of business planning risks remunerated by the allowed returns within price limits, based on the sector-wide notional capital structure.

In addition, companies' business plans have included proposals for a range of delivery incentives which should be aligned to their own customers' priorities. These specific delivery incentives should allocate a wider range of risks efficiently between companies and their customers, depending on the particular nature of performance commitments the company is proposing to make. For example, we have based our draft determinations for the two enhanced companies (South West Water and Affinity Water) on their respective packages of business plan proposals for performance commitments and delivery incentives and uncertainty mechanisms, updated to align with our risk and reward guidance.

The basic WRFIM as proposed in this document is expected to apply to determining the allowed revenues through all companies' wholesale controls, which will follow the same basic form as set out in our final methodology statement, and should be aligned with companies' own more specific delivery incentives.

For this reason, we intend to retain our discretion in applying the penalty rate on an annual basis, in instances where companies provide convincing evidence of such exceptional circumstances on a case-by-case basis in their annual regulatory reporting.

A4.2 Additional safeguards

We intend to put additional safeguards in place to protect customers should the graduated financial incentives of the WRFIM fail to drive efficient behaviours, and there is evidence of more significant sustained mis-forecasting, exposing future customers to larger bill impacts.

In particular, we propose setting a cap and collar threshold as a trigger for potential further investigation by Ofwat for the causes of revenue forecasting deviations. We propose that this should be placed 4% above the revenue flexibility threshold (that is, +6% and -6% of allowed revenue for the year concerned), in line with relevant precedents in other sectors (see figure 2 above) – across the water sector, such large annual deviations have been relatively rare in the past ten years (see tables 5 and 6 in appendix 2).

Companies exceeding these wider cap and collar thresholds in a given year will be required to submit more detailed variance analyses, alongside the standard information required as part of companies' normal annual regulatory reporting. They will also need to commit to best endeavours to recover their allowed revenue within the control period, in line with the basis of the price limits in their licences (subject to the constraints of their other existing obligations, including compliance with prevailing charging rules), otherwise face further potential enforcement actions (and/or potential consequences in setting price limits for the following control period).

This requirement would be consistent with companies' existing licence obligations to "levy charges in a way best calculated to comply with the Price Control or Price Controls determined by the Water Services Regulation Authority pursuant to sub-paragraph 9.3 or sub-paragraph 9.4" [licence condition B (WaSC)], although, as with the annual application of the WRFIM itself, we would review evidence in relation to the circumstances leading to the variations concerned before deciding on the need for any further intervention.

A4.3 Reconciliation of the 2014-15 RCM actuals

In summer 2015, we will be able to reconcile actual revenues against the forecasts used in our final determinations for the final year of the existing control period (2014-15), based on companies' audited annual regulatory reporting.

We explained how this reconciliation will be an input to the existing RCM in our document on reconciling 2010-15 performance. But, in addition, the WRFIM could also potentially apply to the reconciliation of 2014-15 revenues to incentivise accurate forecasting for the 2014-15 period.

In reality, we do not expect material differences between the 2014-15 revenue forecasts used for our final determinations versus actual 2014-15 revenues, given the short period in the current year to be forecast.

However, should any actual differences be significant, the WRFIM and annual reporting mechanisms could potentially also operate in 2015-16 in the same way as other years of the price control period, so that adjustments to allowed revenues from 2016-17 would be also subject to the WRFIM. Reflecting our confirmation of the impacts for the RCM and WRFIM as appropriate, companies would then be able to adjust 2016-17 charges in line with the flexibility offered by the relevant price controls and subject to the prevailing charging rules.

As with all aspects of our final determinations, we will still retain the ability to apply our enforcement powers should companies provide misleading information to us for the regulatory purpose of setting price limits.

Consultation questions

Q6 Do you agree with the proposed cap and collar mechanism as a trigger to further investigation to provide additional safeguards to customers?

Q7 Do you agree we could additionally use the WRFIM to incentivise accurate projections of revenues for 2014-15 in our final determinations?

Appendix 5: Wholesale revenue forecasting incentive mechanism annual iteration process

Table 8 below illustrates the proposed timetable for the annual process required to operate the WRFIM and, if appropriate, household retail controls as described in previous appendices, for the next control period.

In practice, we expect most companies to set out their own specific proposals for monitoring their other business plan commitments during the control period in their forthcoming updates to their December business plans, as set out in '[Setting price controls for 2015-20 – policy and information update](#)'⁷. We have reflected the specific monitoring and reporting proposals we received from South West Water and Affinity Water in their draft determinations.

Having considered other companies' own updated business plan proposals, we will consult further on common sector-level monitoring and reporting requirements more generally along with our August draft determinations. Having considered responses to the WRFIM proposals in this consultation, at the same time we will consult further on the details of the iteration process summarised below, and the supporting information requirements needed to administer the WRFIM.

Based on the proposals set out in previous appendices, we do not expect companies will need to submit significant additional information annually to administer the mechanism, unless deviations from allowed annual revenues are exceptional in cause or impact (justifying abatement of the graduated penalty or further Ofwat investigation as required). Therefore, the mechanism is normally expected to be very simple to administer.

⁷ 'Setting price controls for 2015-20 – policy and information update', Ofwat, April 2014.

Table 8 Indicative timetable for the revenue forecasting incentive iteration process

Charging year (t-2) ending	Company reports on its charging year (t-2) performance explaining source of variances	Ofwat proposes the adjustment amount for consultation	Ofwat notifies companies the adjustment amount	Adjustment applied to the charging year (t) beginning
31 March 2015	July 2015	September 2015	November 2015	April 2016
31 March 2016	July 2016	September 2016	November 2016	April 2017
31 March 2017	July 2017	September 2017	November 2017	April 2018
31 March 2018	July 2018	September 2018	November 2018	April 2019
31 March 2019	July 2019	September 2019	November 2019	April 2020
31 March 2020	July 2020	September 2020	November 2020	April 2021

As indicated above, and discussed in appendix 4, in 2015 we also propose to reconcile the AMP5 RCM amount for 2014-15. This will ensure allowed AMP5 revenues are provided for, alongside potentially applying the WRFIM process to deviations in the 2014-15 wholesale revenues forecast using the basic reporting timetable outlined above.

This means that companies will report their actual 2014-15 revenues, relevant to both the AMP5 RCM and potentially the AMP6 WRFIM, in summer 2015. If we extended the mechanism to these revenues, we would confirm the size and nature of any relevant WRFIM adjustments by November 2015 so that companies could be aware of these for setting charges for 2016-17.

We do not currently anticipate introducing a sector-wide licence-based mechanism to adjust the limits to each year's allowed revenues (K factors) set in final determinations without a further review.

Therefore, in general, net financial impacts of the WRFIM on prices would be reflected in the following price review (PR19), alongside those of other graduated financial incentives that we ourselves set in price limits, such as menu cost performance incentives and SIM performance incentives, and similar to the existing proposed reflection of RCM outcomes in AMP6 wholesale price limits.

But, as we noted above, we do not expect the net financial impacts of the WRFIM on future customers' bills in the next control period to be comparable in size to some of those arising from the RCM. Also, it remains open to companies to propose to adjust the price limits in the licence to reflect performance within the period as part of their wider package of delivery incentives, following customer engagement.

Appendix 6: Illustrative examples

The following examples illustrate how the RFIM will apply during AMP6 for the wholesale water and retail household controls of a fictitious company. We have based the calculations on the following parameters as set out in the main document.

- Specified discount rate: 3.7%.
- Revenue flexibility threshold: 2.0%.
- Penalty rate: 3.0%.
- Reconciliation period: two years.

For simplicity of exposition in these illustrative examples, RPI is assumed to remain at zero for all affected years, and common assumptions for the specified discount rate and penalty rate have been used for both the wholesale and retail controls.

Tables 9 and 10 below summarise the illustrative examples for wholesale and retail, respectively.

A6.1 WRFIM examples

A6.1.1 Example 1 – over-recovery outside revenue flexibility threshold

In 2015-16, the allowed wholesale water service revenue is £100 million, while the actual wholesale revenue recovered is £103 million. This implies a £3 million over-recovery for the year (3%), an amount exceeding the revenue flexibility threshold of 2%.

The WRFIM penalty rate applies to the full over-recovery amount – that is, £3 million. An adjustment of -£3.32 million would be made under the WRFIM, which offsets against allowed wholesale revenue in year t (2017-18). The total adjustment is calculated as:

$$\begin{aligned}
 WRFIM_t &= - \left\{ (RR_{t-2} - AR_{t-2}) \times \left[1 + \left(\frac{I + PR}{100} \right) \right] \times \left[1 + \left(\frac{I}{100} \right) \right] \right\} \times (1 + RPI_{t-1}) \times (1 + RPI_t) \\
 &= - \left\{ (103 - 100) \times \left[1 + \left(\frac{3.7 + 3}{100} \right) \right] \times \left[1 + \left(\frac{3.7}{100} \right) \right] \right\} \times (1 + 0) \times (1 + 0) \\
 &= - \text{£}3.32 \text{ million.}
 \end{aligned}$$

Thus, in the 2017-18 allowed revenue calculation the company effectively refunds customers for the over-recovered amounts in 2015-16, and the associated financing they have provided. The 3% penalty rate applies for a single year only, while the 3.7% specified discount rate applies for the full two years. This ensures that the refund (excluding the penalty amounts) remains equivalent to the over-recovered amount, in present value terms.

It should be noted that this would not itself constrain actual wholesale revenues collected in 2017-18, which may be affected by subsequent demand variations and the company's actual charging policy. But a penalty would be accrued for each year that actual revenues remained outside the threshold, which (as with the RCM) we would take account of at the next price review. The example is intended to illustrate the effect of a single year variance, with all other factors in line with our final determinations.

A6.1.2 Example 2 – under-recovery outside revenue flexibility threshold

For the same company, in 2018-19 adjusted allowed wholesale revenue is £102.97 million, while actual wholesale revenue recovered is £100 million. It should be noted that the adjusted allowed wholesale revenue represents our PR14 final determination (FD14) allowed revenue after WRFIM adjustments have been made in prior years (see table 9 below). This implies a £2.97 million under-recovery relative to the adjusted allowed revenue (that is, 2.9%), an amount exceeding the revenue flexibility threshold of 2%.

The WRFIM penalty applies to the full under-recovery amount – that is, £2.97 million. An adjustment of +£3.10 million would be made as an addition to allowed wholesale revenues in 2010-21. This is calculated as:

$$\begin{aligned}
 WRFIM_t &= - \left\{ (RR_{t-2} - AR_{t-2}) \times \left[1 + \left(\frac{I+PR}{100} \right) \right] \times \left[1 + \left(\frac{I}{100} \right) \right] \right\} \times (1 + RPI_{t-1}) \times (1 + RPI_t) \\
 &= - \left\{ (100 - 102.96) \times \left[1 + \left(\frac{3.7-3}{100} \right) \right] \times \left[1 + \left(\frac{3.7}{100} \right) \right] \right\} \times (1 + 0) \times (1 + 0) \\
 &= \text{£3.10 million.}
 \end{aligned}$$

In this case, the company is permitted an increase in allowed wholesale revenue to compensate for the previous under-recovery. However, the size of the increase is abated by the penalty rate, so that the rate received by the company for financing the under-recovery is 0.7% not 3.7% for a single year.

A6.1.3 Example 3 – recovery within revenue flexibility threshold

Using the same company AMP6 profile, set out in table 9 below, in 2016-17 adjusted allowed wholesale revenue is £103.04 million while actual wholesale revenue recovered is £104 million. This implies an over-recovery of £0.96 million for the year (0.9%), an amount not exceeding the 2% revenue flexibility threshold. Therefore, the WRFIM penalty framework does not apply. The relevant adjustment in 2018-19 is -£1.03 million. This is calculated as:

$$\begin{aligned}
 WRFIM_t &= - \left\{ (RR_{t-2} - AR_{t-2}) \times \left[1 + \left(\frac{I+PR}{100} \right) \right] \times \left[1 + \left(\frac{I}{100} \right) \right] \right\} \times (1 + RPI_{t-1}) \times (1 + RPI_t) \\
 &= - \left\{ (104 - 103.04) \times \left[1 + \left(\frac{3.7+0}{100} \right) \right] \times \left[1 + \left(\frac{3.7}{100} \right) \right] \right\} \times (1 + 0) \times (1 + 0) \\
 &= -\text{£1.03 million.}
 \end{aligned}$$

In this case, the allowed wholesale revenue is adjusted only to refund customers for the over-recovery and to ensure that this refund remains equivalent in present value terms when compared with the adjusted allowed wholesale revenue for this year. As discussed in section A2.2, a company that is within the threshold for all five years will have an additional adjustment in PR19 to ensure the real present value of revenue recovered remains unchanged when compared with allowed revenue stated in our final determinations.

Table 9 Example of wholesale revenue forecasting incentive mechanism iteration process for a fictitious company⁸

Company: Fictitious company
 Control: Wholesale water
 Threshold: 2.00%
 Penalty rate: 3.00%

Year	AMP5	AMP6					AMP7	
	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
FD14 allowed revenue	–	100.0	102.00	103.00	104.00	105.00	–	–
AMP5 RCM blind year adjustment	–	–	1.04	–	–	–	–	–
AMP6 forecasting incentive adjustment including over-/under-recovery true-up	–	–	–	-3.32	-1.03	-2.57	3.10	1.54
Adjusted allowed revenue	–	100.00	103.04	99.68	102.97	102.43	–	–
Revenue recovered	–	103.00	104.00	102.00	100.00	101.00	–	–
Over (+)/under (-) recovery	–	3.00	0.96	2.32	-2.97	-1.43	–	–
Threshold (based on adjusted allowed revenue)	–	2.00	2.06	1.99	2.06	2.05	–	–
AMP6 forecasting incentive adjustment including over-/under-recovery true-up	–	-3.32	-1.03	-2.57	3.10	1.54	–	–
AMP5 RCM adjustment	1.04	–	–	–	–	–	–	–

⁸ For the purposes of this illustrative example, adjustments which carry forward into AMP7 are recovered in annual revenues in the same way as in AMP6.

A6.2 Household retail incentive mechanism examples

We illustrate two options for the household retail control using an unexpected 3% deviation in the actual number of connections in the first year (2015-16) of the price control. The form of the retail ACTS control will allow automatic adjustments in total allowed retail revenues in line with such unexpected variations in the numbers of connections in the period. Therefore, adjustments only apply for variations in actual revenue recovered relative to the allowed revenue which is already adjusted each year for changes in actual connections.

A6.2.1 Example 1 – no forecasting incentive and true-up applied after the period (similar to existing RCM)

In this case, allowed revenue and actual revenue recovered over the period are compared at the next price review (PR19), with the final year 2019-20 adjusted at the subsequent price review.

Allowed revenue reflects changes in connections. Annual over- and under-recoveries compared with the (adjusted) annual allowed revenue are both applied in the same way in the price review adjustment.

For example, in 2015-16, connections increase by 3% above our final determination assumptions. Assuming that allowed revenue in 2016-17 is £14.70 million (at PR14 final determinations); it would increase to £15.14 million following the uplift in connections.

If actual revenue recovered is higher still at £15.5 million, there would be an over-recovery of £0.36 million. This additional revenue – without any additional penalty – would be refunded to customers through an adjustment at the next price review, as with the RCM at present, in order to maintain present value of allowed household retail revenues across the period.

A6.2.2 Example 2 – RFIM applied to retail revenue for a fictitious company

In this case, the revenue forecasting incentive mechanism applies to the household retail control in the same way as for the wholesale controls (see table 10). In 2015-16, the adjusted PR14 final determination allowed revenue is £14.00 million, but as a result of the uplift in connections due to a 3% unexpected increase in connections, allowed revenue increases to £14.42 million.

Actual revenue recovered is £15.00 million in revenue in the year. So there is an over-recovery of £0.58 million (that is, 4.1%). This is outside of the incentive mechanism threshold of 2% and so the penalty rate applies (that is, 3%). The total RFIM adjustment is £0.64 million. This is calculated as:

$$\begin{aligned}
 RFIM_t &= - \left\{ (RR_{t-2} - AR_{t-2}) \times \left[1 + \left(\frac{I+PR}{100} \right) \right] \times \left[1 + \left(\frac{I}{100} \right) \right] \right\} \times (1 + RPI_{t-1}) \times (1 + RPI_t) \\
 &= - \left\{ (15.00 - 14.42) \times \left[1 + \left(\frac{3.7+3}{100} \right) \right] \times \left[1 + \left(\frac{3.7}{100} \right) \right] \right\} \times (1 + 0) \times (1 + 0) \\
 &= -£0.64 \text{ million.}
 \end{aligned}$$

Of the total £0.64 million, only £18,000 is the penalty component. For the fictitious company in the examples above, this is only 0.02% of the total allowed revenue for the company in that year. Such a small incentive may not in practice significantly affect forecasting accuracy.

Table 10 Example of household revenue forecasting incentive mechanism iteration process for a fictitious company⁹

Company: Fictitious company
 Control: RFIM for retail
 Threshold: 2.00%
 Penalty rate: 3.00%

Year	AMP5	AMP6					AMP7	
	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
FD14 retail allowed revenue	–	14.00	14.70	15.44	16.21	17.02	–	–
AMP6 forecasting incentive adjustment including over-/under-recovery true-up	0.00	0.00	0.00	-0.64	-0.40	-1.09	-0.78	-1.73
% change in connections from forecast		1.03	1.03	1.03	1.03	1.03		
Adjusted allowed revenue	–	14.42	15.14	15.26	16.30	16.44	–	–
Revenue recovered	–	15.00	15.50	16.25	17.00	18.00	–	–
Over (+)/under (-) recovery	–	0.58	0.36	0.99	0.70	1.56	–	–
Threshold (based on FD14 allowed revenue adjusted for change in connections)	–	0.29	0.30	0.31	0.33	0.33	–	–
AMP6 forecasting incentive adjustment including over-/under-recovery true-up	–	-0.64	-0.40	-1.09	-0.78	-1.73	–	–

⁹ For the purposes of this illustrative example, adjustments which carry forward into AMP7 are recovered in annual revenues in the same way as in AMP6.

Consultation question

Q8 Do you have any comments in relation to the details and mechanics of the iteration process?

Appendix 7: Historical variations

In this appendix, we present four histograms showing the incidence of levels of variation across the companies for water and wastewater revenues in AMP4 and AMP5.

Figure 5 Sector-wide wholesale water over-/under-recovery as a % of annual turnover during AMP4

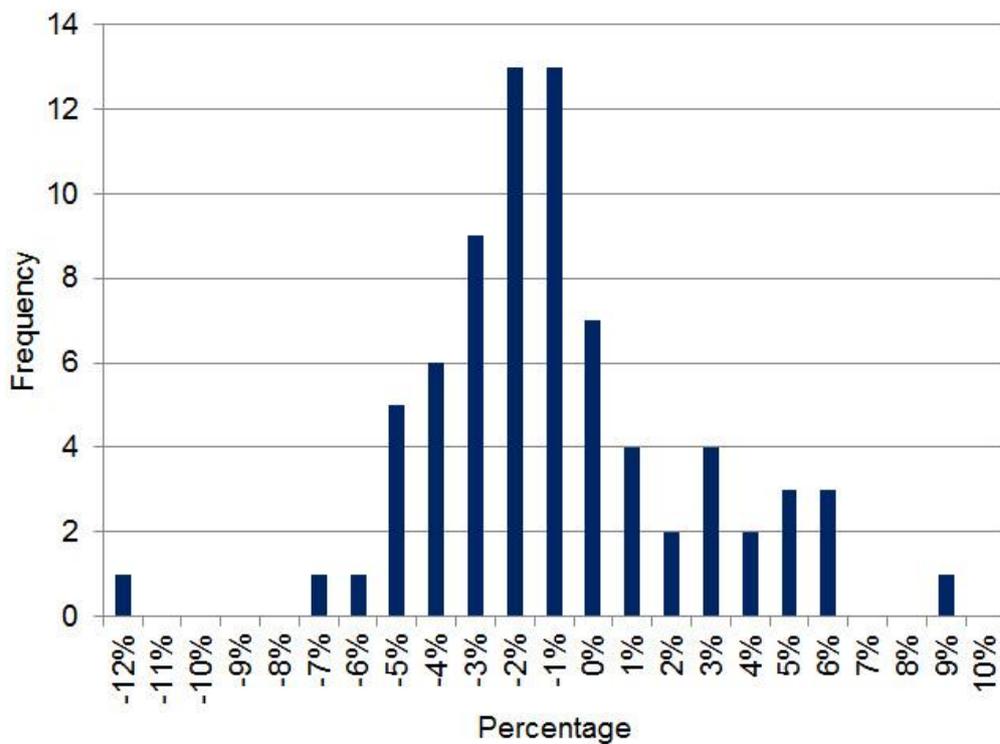


Figure 6 Sector-wide wholesale water over-/under-recovery as a % of annual turnover during AMP5

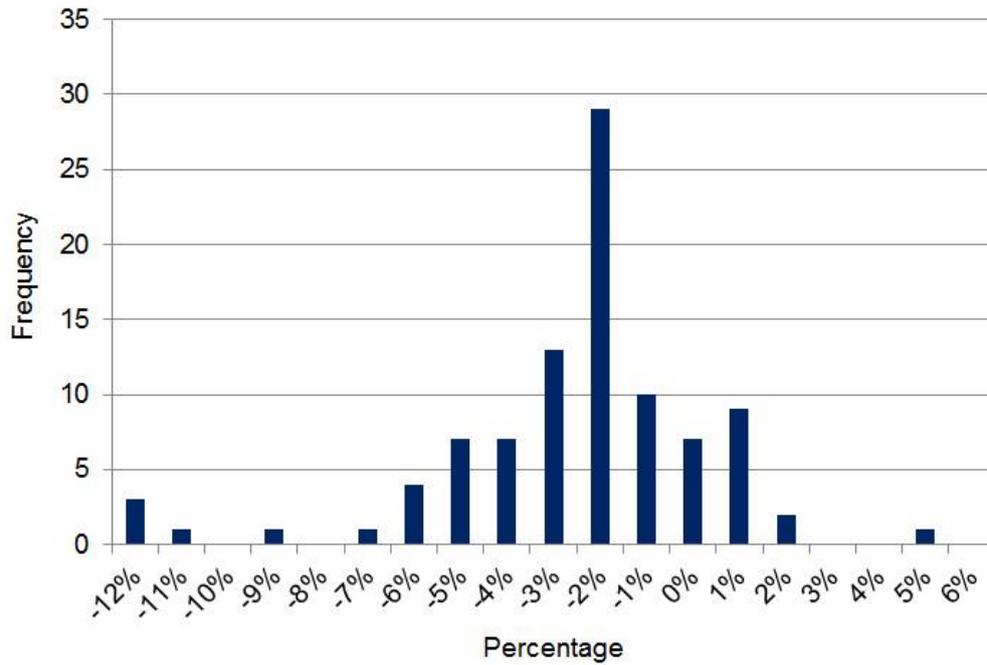


Figure 7 Sector-wide wholesale wastewater over-/under-recovery as a % of annual turnover during AMP4

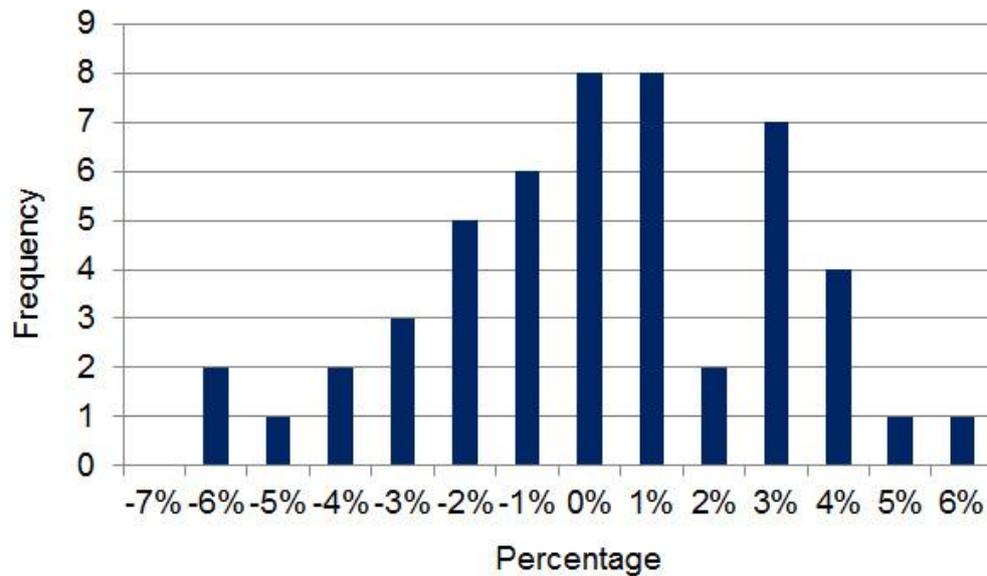
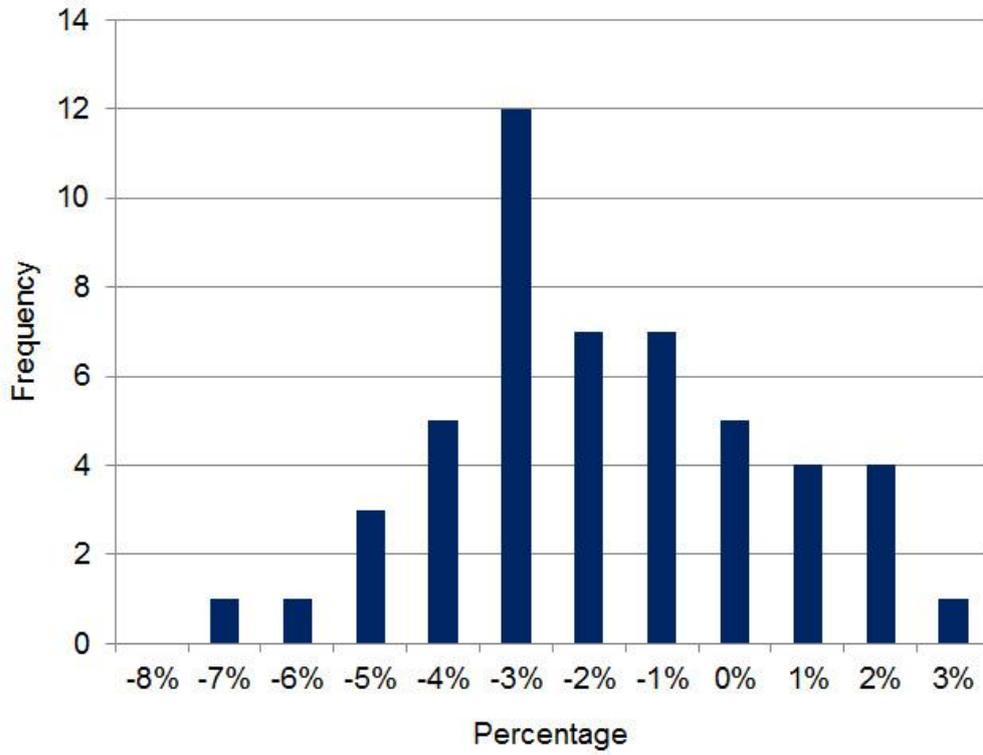


Figure 8 Sector-wide wholesale wastewater over-/under-recovery as a % of annual turnover during AMP5





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