

RPI/CPI Revenue correction / True up including Model assumptions and user guide

April 2016

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1. Revenue correction / True-up mechanism

Ofwat has consulted with the industry on the proposed switch in indexation used in price controls from RPI to CPI.

Ofwat's consultation proposition was to switch revenues to CPI from 2020, but to transition the RCV to CPI over a period of time.

The December 2015 W2020 consultation proposed that from 2020, 50% of the Old RCV would be linked with RPI and 50% linked to CPI.

In setting out the proposition, we said we would commit to ensuring that the impact is neutral to company (nominal) revenues and customer bills in net present value terms.

We set out that revenues would be set on the basis of CPI, but we forecast growth of RPI linked proportion of the Old RCV based on forecast RPI, consequently we would need to make an assumption about the forecast difference between CPI and RPI.

The outturn wedge between RPI and CPI may vary from forecast. This variance can arise through a change in either one or both rates of inflation. Depending on the net effect of the movement in rates or variance in wedge, a company may have been allowed more or less revenue on the portion of Old RCV that is linked to RPI.

Our proposal in relation to any variance in the outturn (Ex-Post) wedge is to carry out a revenue correction / true-up at the end of the AMP.

In response to our consultation, stakeholders have sought clarity on the true up mechanism.

The following slides provide further details on:

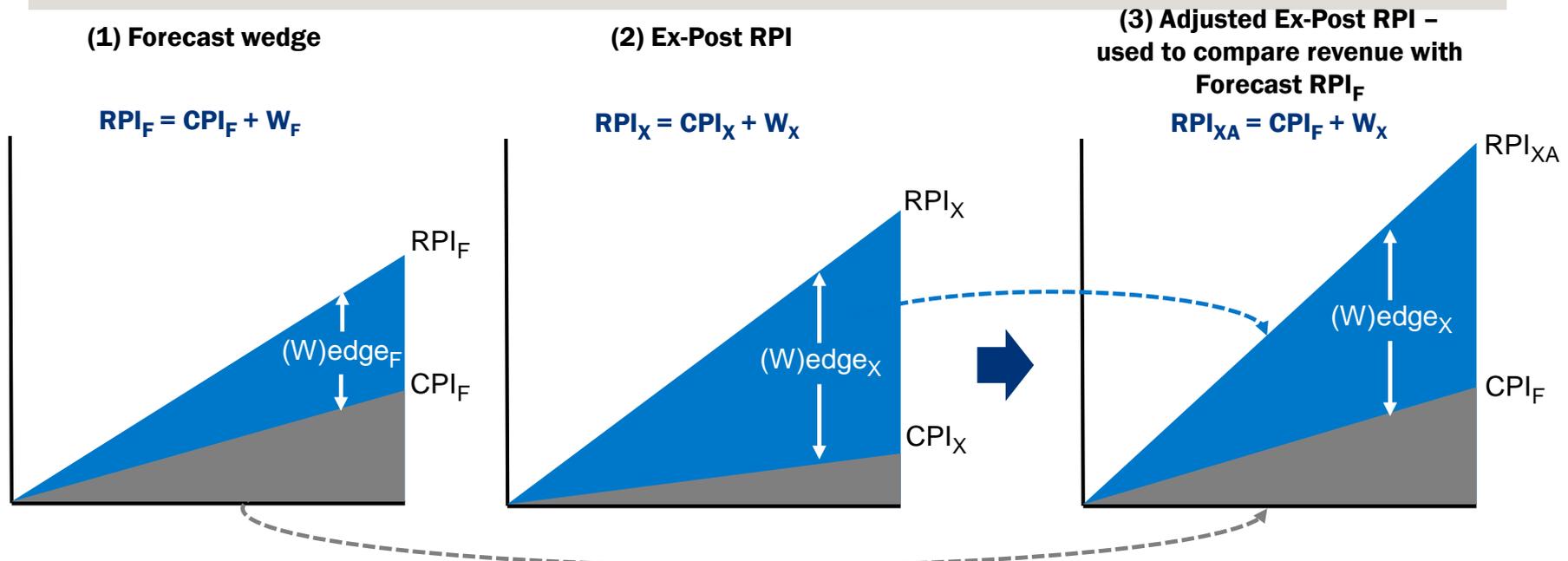
- What drives the revenue correction / True-up for the RCV that is linked to RPI;
- Why a correction is not required for CPI linked revenue; and
- The financial impact under different scenarios for a change in the wedge.

An illustrative RPI-CPI impact Excel model has been developed, along with a user guide and model assumptions, which provides an illustration of the financial impact of varying the proportion of Old RCV that is linked to RPI and also impact of varying the outturn wedge. Further details of the model assumptions and user guidance are provided in sections 2 and 3 below.

What drives the revenue correction – ‘Old RCV’ linked to RPI

The revenue correction related to the ‘Old RCV’ is driven by a change in RPI and/or CPI inflation rates and resultant change in the wedge. As per the illustration below:

1. The Forecast RPI is Forecast CPI plus the Forecast Wedge.
2. Assuming a variance in one or both rates, the Outturn or Ex-Post RPI is the Ex-Post CPI plus the Ex-Post Wedge;
3. In order to isolate the revenues subject to the correction, the Old RCV linked to RPI is indexed with the Forecast RPI and compared to a case where this RCV is indexed to an Adjusted Ex-Post RPI. The Adjusted Ex-Post RPI is the sum of the Forecast CPI and Ex-Post wedge i.e. as the Forecast CPI is fixed or agreed, it is essentially the variance in the wedge that drives the variance in indexation and hence revenues.



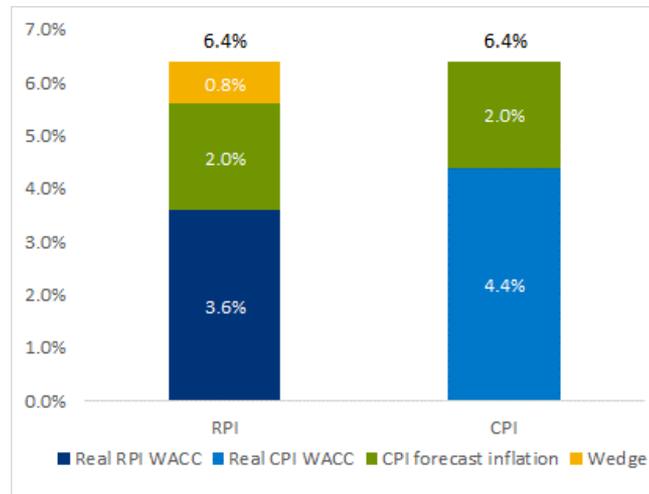
The wedge variance impacts both the run-off and returns:

Run-off impact

- The current licence says that income in year x equals income in year $x-1 * (1 + RPI + k)$;
- With a transition to CPI, the Forecast wedge contributes to the K-factor. If the outturn wedge is different to forecast, then the adjustment included within K will be too small or too big;
- Hence, an adjustment in revenue would be required to correct for this;
- Further details of this impact is provided as an illustration in the Appendix.

Returns impact

- A change in the wedge will result in a difference in the indexation applied to the RCV and hence returns which are determined by the Real RPI WACC as shown in the illustration below.



The RCV linked to CPI as well as allowed revenue (PAYG, tax and other revenue) do not require a correction to revenues given a variance in Ex-Post CPI compared to Forecast CPI.

RCV linked to CPI

The Old RCV transitioning to CPI and New RCV linked to CPI would recover the correct nominal CPI allowed revenue as companies would receive higher or lower:

- outturn CPI through indexation via a midnight adjustment; and
- nominal return and run-off allowance (due to the fact that all of the revenue gets uplifted / reduced with the higher / lower outturn CPI) through the licence.

Revenue linked to CPI

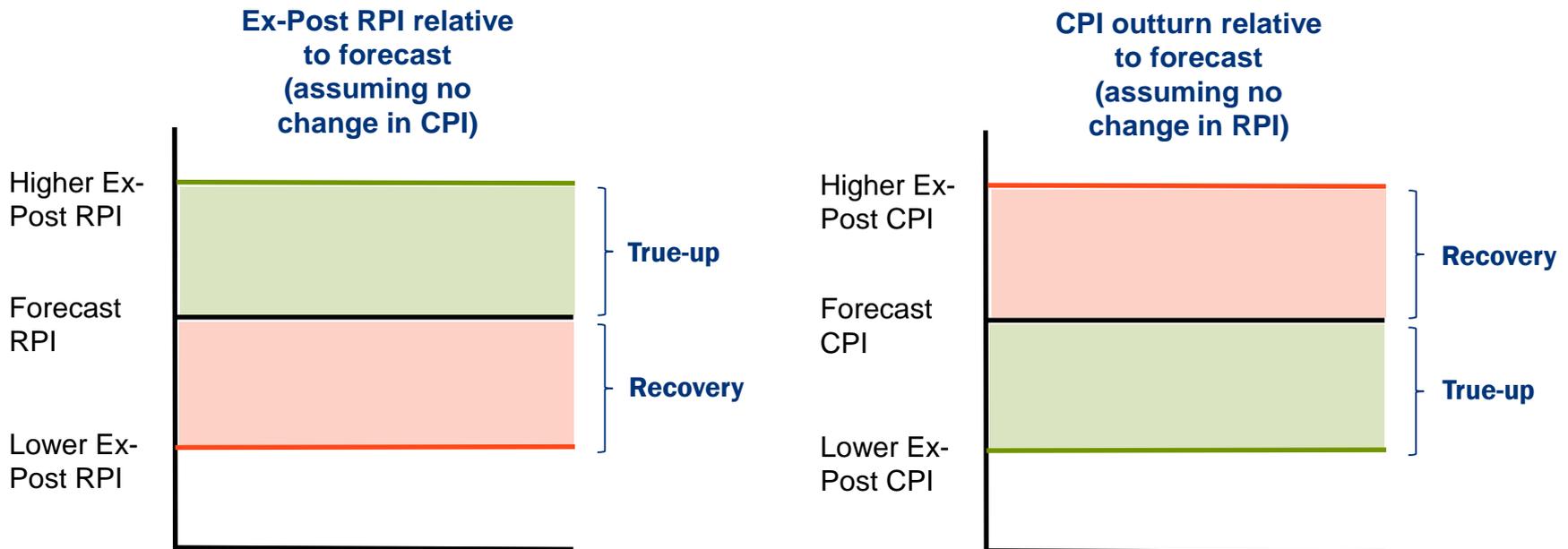
Allowed revenue would get uplifted or reduced in line with outturn CPI through the licence and hence there would be no correction required in revenues.

The variance between Ex-Post and Forecast allowed revenues on the Old RCV are discounted over the AMP period;

A Nominal discount rate, based on the Real CPI WACC adjusted for Ex-Post CPI i.e. the inflation that is experienced, is applied;

Assuming no change in CPI, a higher Ex-Post RPI would result in True-up value owed to the company and a lower Ex-Post RPI would result in revenue recovery from the company; and

Assuming no change in RPI, a higher Ex-Post CPI would result in revenue recovery from the company and a lower Ex-Post CPI would result in True-up owed to the company.



2. Model assumptions

All values contained within the Model and user guide are illustrative and should not be relied upon by any company or organisation in order to assist their decision making.

There are a number of points that may need to be considered for estimating True-up value in practice which are beyond the scope of this illustrative model, including:

- PR19 legacy adjustments e.g. land sales, totex menu adjustments and RCV ODI rewards/penalties;
- Any timing differences between average and closing RPI and CPI, would may need to be taken into account in order to set the opening RCV balance in 2019/20, also the difference between tariff year and average year CPI;
- Any blind year (19/20) adjustments at PR24 for all the above
- Any interactions with any wholesale revenue corrections at PR24

The Model provides an annual forecast over thirty years covering AMPs PR19 to PR44.

Three scenarios are considered in order to provide illustrative estimates as described below (scenario selection is made via the Dashboard):

- **True-up** – The True-up scenario displays results of the revenue correction or true-up estimation. Charts and tables relating to the proportion of revenues linked to RPI and CPI and RCV balance will not be displayed when the True-up scenario is selected;
- **Current (100% RPI)** – The Current scenario displays results relating to the proportion of revenues linked to RPI and CPI and RCV balance assuming 100% of the RCV and Revenues is linked to RPI. As the True-up estimation does not apply under this scenario, values will not appear in the associated tables; and
- **Forecast** – The Forecast scenario displays results relating to the proportion of revenues linked to RPI and CPI and RCV balance based on user inputs including the proportion of Old RCV linked to RPI, Forecast wedge and profiling of revenues through the run-off and PAYG rates. As the True-up estimation only applies under the agreed PR14 run-off and PAYG rates (assumed to continue throughout the forecast period), adjusting these inputs would invalidate the True-up estimate and hence the True-up values are not displayed under this scenario.

Forecast revenues assuming a forecast wedge are estimated in the cFcst_TU worksheet with Ex-Post revenues including any change in the wedge estimated in the cExP_TU worksheet. In order to estimate the True-up value the difference in revenues between the Ex-Post and Forecast revenues are estimated in the oTrue-up sheet and then discounted.

The following assumptions apply in respect of the revenue and True-up estimation:

General assumptions

PR14 inputs in real 2012/13 RPI indexed prices have been used as a basis for the model. The model assumes that these values are the same for PR19 e.g. we have assumed that the closing RCV balance in 2014/15 (£63,720m) is the same for 2019/20.

Price inflation

Price inflation is included for 'FD price', RPI and CPI. FD price inflation is applied to non-RCV revenue components - PAYG, Tax and Other revenue. See RCV sections below for price indexation applied. It is assumed that there is no variation in price inflation between the FD price, RPI and CPI in the period from 2017/8 to 2019/20.

RCV Old, including estimation of run-off and returns

- This section estimates the RCV balance, including run off and returns for the i) user defined proportion (via the Dashboard) of Old RCV that is linked to RPI and ii) remaining proportion of Old RCV that is linked to CPI. NB. for the current scenario Old and New RCV is 100% RPI linked.

- In the cFcst_TU sheet (for the True-up estimation) the RCV balance is set to equal the Ex-Post RCV balance at the start of each AMP as the Forecast will need to be based on the Outturn position.
- Old RCV closing balance = Old RCV Opening balance plus indexation less/plus RCV transition adjustment less run-off (the transition adjustment is deducted in the case of RPI, though this does not apply if the Current scenario is selected).
- The closing 2019/20 RCV is assumed to be in 2017/18 real RPI linked prices, hence inflated to 2019/20 nominal prices using the RPI index.
- The share of Old RCV closing balance that is RPI linked at the end of the AMP (input on the Dashboard) is used to estimate the RCV balance linked to RPI and CPI NB. for the current scenario Old and New RCV is 100% RPI.
- Indexation applied to the opening RCV balance including transition adjustment:
 - Forecast - RPI and CPI inflation applied as per model inputs on the Dashboard:
 - RPI = RPI Forecast
 - CPI = CPI Forecast
 - Ex-Post:
 - RPI = CPI Forecast + Ex-Post wedge
 - CPI = CPI Forecast
- Run off is estimated on a reducing balance basis. Run-off is estimated on the opening RCV balance plus indexation and any transition adjustment.

- The run-off rate is based on PR14 inputs, set at the industry level of 4.4% (NB. this is a simple average of company run-off rates). NB. if the Forecast scenario is selected the run-off can be set (through goal-seek enabled macro) to equalise the revenue with the Current (100% RPI) scenario.
- The return is estimated using the real RPI or real CPI WACC and applied to the average RCV balance (average of period opening and closing RCV).

RCV New, including estimation of run-off and returns

- This section estimates the RCV balance including additions, run off and returns for the incremental or 'New' RCV which is assumed to be linked to CPI 100% (100% RPI in the case of the Current Scenario).
- $\text{RCV closing balance} = \text{RCV Opening balance} + \text{indexation} + \text{additions} - \text{Run-off}$.
- Totex additions are based either on PR14 inputs for the True-up estimation (on the cFcst_TU and cExp_TU sheets) and Current scenarios. If the Forecast scenario is selected the PAYG rate (i.e. product of Totex and the non-PAYG rate) can be estimated so that annual revenue is equalised with the Current (100% RPI) scenario.
- Run off is estimated on a reducing balance basis. As a simplifying assumption run-off is estimated on the opening RCV balance plus indexation and any transition adjustment though excluding any in period additions, hence there is no run-off in the first period of the forecast.
- The run-off rate is based on PR14 inputs, set at the industry level of 4.4% (NB. this is a simple average of company run-off rates). NB. if the Forecast scenario is selected the run-off can be set (through goal seek enabled macro) so that annual revenue is equalised with the Current (100% RPI) scenario.

- Indexation at the CPI Forecast rate is applied to the opening RCV balance including transition adjustment.
- The return is estimated using the Real CPI WACC and applied to the average RCV balance (average of period opening and closing RCV).

PAYG

- PAYG for the True-up estimation and Current scenario is based on the PR14 PAYG rate. If the Forecast scenario is selected, the PAYG rate can be (through goal seek enabled macro) so that annual revenue is equalised with the Current (100% RPI) scenario.
- The PR14 PAYG inputs are assumed to be in real 2017/18, RPI linked, prices and inflated using the FD index.

Tax revenue

- Tax for the Current scenario is based on the PR14 inputs. The tax inputs are assumed to be in real 2017/18 prices and inflated using FD price index.

Other revenue

- Other revenue for the Current scenario is based on the PR14 inputs. The Other revenue inputs are assumed to be in real 2017/18 prices and inflated using FD price index.

True-up value

- Forecast revenues assuming a forecast wedge are estimated in the cFcst_TU worksheet with Ex-Post revenues including any change in the wedge estimated in the cExp_TU worksheet.
- In order to estimate the True-up value the difference in revenues between the Ex-Post and Forecast revenues are estimated in the oTrue-up sheet and then discounted.
- The discount rate applicable to the revenue variance is the Real CPI WACC plus / adjusted for Ex-Post CPI.

3. Model user guide

Introduction

The purpose of the user guide is to provide instructions on how to use the RPI/CPI model (“Model”), which relates to the following Excel file:

RPI_CPI tool v3.0 240316.xlsm

The model has been developed and tested using 32 bit Excel 2013 and therefore it cannot be guaranteed that the Model will operate as intended in alternative versions of Excel.

Purpose of the Model

The purpose of this model is to illustrate what the true-up value would be at PR24 and future AMPs, given any difference in the RPI-CPI wedge compared to the forecast.

The model also:

- Illustrates the proportion of revenues that are linked to RPI and CPI over the forecast period; and
- Provides an estimate of the customer bill impact (see the oCustBill sheet), assuming bills follow the same profile as allowed revenue with no change in demand.

All values contained within the Model and this user guide are illustrative and should not be relied upon by any company or organisation in order to assist their decision making.

The Model worksheets together with a brief description of each sheet is provided in the table below.

Worksheet	Description
Front page	Model version, contact details and model objective
Assumptions	List of model assumptions
Dashboard	Ability to switch scenarios, flex key inputs and display of key outputs
oCustBill	Chart displaying the customer bill profile split between PAYG and RCV components
oTrue-up	True-up estimation
oRev%	Proportion of revenues linked to RPI and CPI
oRCV	RCV balance split between RPI and CPI
oAMP	AMP summary of RCV, revenues and True-up revenues
cFcst_TU	Estimation of Forecast revenues (excl. wedge variance) for the True-up estimation
cExp_TU	Estimation of Ex-Post revenues (incl. wedge variance) for the True-up estimation
cCurrent	Estimation of revenues assuming 100% RCV and allowed revenues linked to RPI
cFcst_Prof	Estimation of revenues based on Dashboard user inputs including proportion of Old RCV linked to RPI, Forecast wedge and profiling of revenues through the run-off and PAYG rates
Inputs	Additional model inputs (separate to the Dashboard)

The Model provides an annual forecast over thirty years covering AMPs PR19 to PR44.

Three scenarios are considered in order to provide illustrative estimates as described below (scenario selection is made via the Dashboard):

- **True-up** – The True-up scenario displays results of the revenue correction or true-up estimation. Charts and tables relating to the proportion of revenues linked to RPI and CPI and RCV balance will not be displayed when the True-up scenario is selected;
- **Current (100% RPI)** – The Current scenario displays results relating to the proportion of revenues linked to RPI and CPI and RCV balance assuming 100% of the RCV and Revenues is linked to RPI. As the True-up estimation does not apply under this scenario, values will not appear in the associated tables; and
- **Forecast** – The Forecast scenario displays results relating to the proportion of revenues linked to RPI and CPI and RCV balance based on user inputs including the proportion of Old RCV linked to RPI, Forecast wedge and profiling of revenues through the run-off and PAYG rates. As the True-up estimation only applies under the agreed PR14 run-off and PAYG rates (assumed to continue throughout the forecast period), adjusting these inputs would invalidate the True-up estimate and hence the True-up values are not displayed under this scenario.

Dashboard navigation

The dashboard allows the user to select inputs in relation to the proportion of Old RCV that is linked to RPI and adjustment to the RPI / CPI rates which can drive a difference in the wedge between the Forecast and Ex-Post scenarios.

The Dashboard also provides the ability to adjust the run-off rate and PAYG rate for the Forecast scenario.

Inputs are shaded yellow on the left hand side, with results displayed on the right hand side of the dashboard.

Inputs

Results

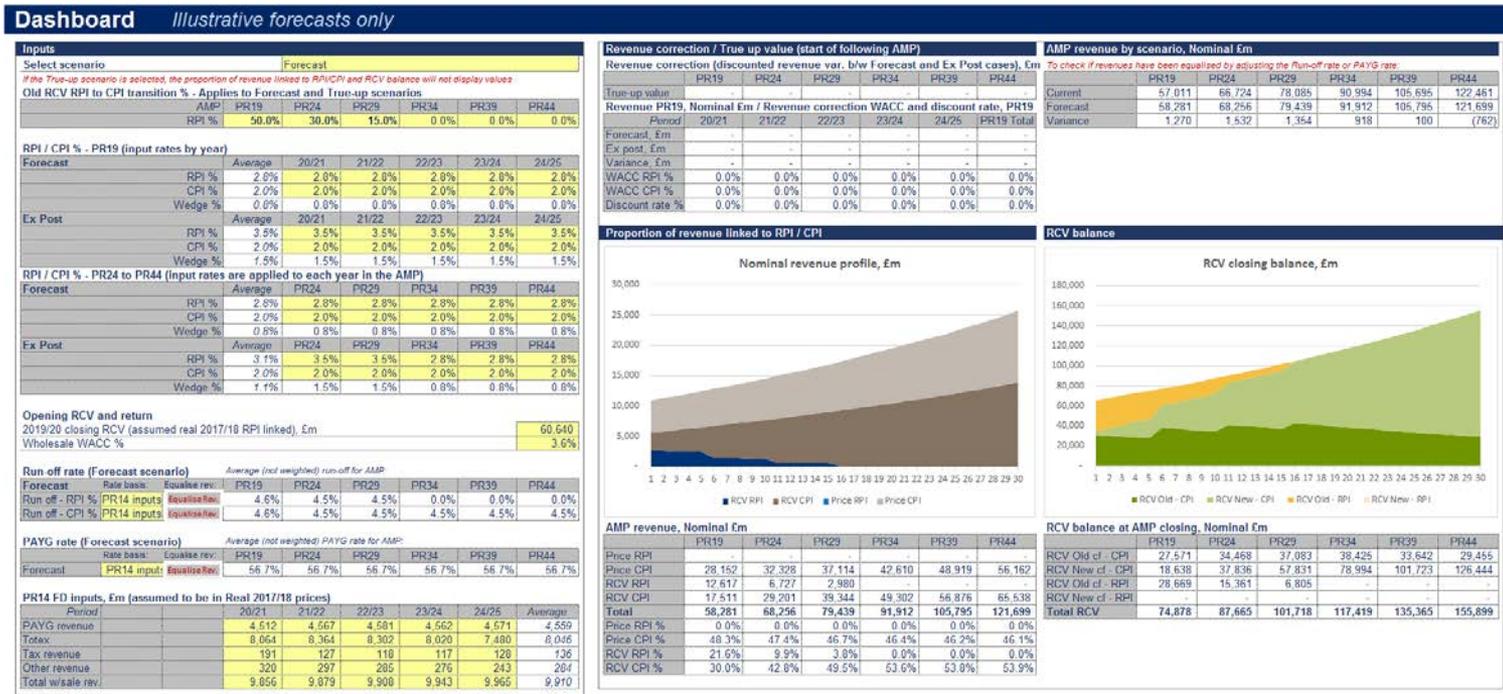
1. Scenario selection

2. Proportion of revenue linked to RPI/CPI – Adjusting Old RCV linked to RPI %

3. True-up estimate - Adjusting RPI/CPI wedge (True-up scenario only)

4. Adjusting the run-off rate (Forecast scenario only)

5. Adjusting the PAYG rate (Forecast scenario only)



1 Scenario selection

Users can select the scenario on the top left hand side drop down and see the results of this scenario selection on the right hand side as shown below.

When the True-up scenario is selected, results for the AMP revenue, Proportion of revenues linked to RPI / CPI and RCV balance will not be displayed. The opposite is true if either the Current or Forecast scenario is selected i.e. results of the True up will not be displayed.

Scenario selection box

The True-up results are displayed given the True-up scenario is selected. The AMP revenue, proportion of revenue linked to RPI and CPI and RCV balance (charts and tables) are not displayed.

Dashboard Illustrative forecasts only

Inputs

Select scenario: True-up

If the True-up scenario is selected, the proportion of revenue linked to RPI/CPI and RCV balance will not display values.

Old RCV RPI to CPI transition % - Applies to Forecast and True-up scenarios

AMP	PR19	PR24	PR29	PR34	PR39	PR44
RPI %	50.0%	30.0%	15.0%	0.0%	0.0%	0.0%

RPI / CPI % - PR19 (input rates by year)

Forecast	Average	20/21	21/22	22/23	23/24	24/25
RPI %	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%
CPI %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Wedge %	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%

Ex Post

Average	20/21	21/22	22/23	23/24	24/25
RPI %	3.5%	3.5%	3.5%	3.5%	3.5%
CPI %	2.0%	2.0%	2.0%	2.0%	2.0%
Wedge %	1.5%	1.5%	1.5%	1.5%	1.5%

RPI / CPI % - PR24 to PR44 (input rates are applied to each year in the AMP)

Forecast	Average	PR24	PR29	PR34	PR39	PR44
RPI %	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%
CPI %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Wedge %	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%

Ex Post

Average	PR24	PR29	PR34	PR39	PR44
RPI %	3.1%	3.5%	3.5%	2.8%	2.8%
CPI %	2.0%	2.0%	2.0%	2.0%	2.0%
Wedge %	1.1%	1.5%	1.5%	0.8%	0.8%

Opening RCV and return

2019/20 closing RCV (assumed real 2017/18 RPI linked), £m: 60,640

Wholesale WACC %: 3.6%

Run-off rate (Forecast scenario) Average (not weighted) run-off for AMP

Forecast	Rate basis	Equalise rev.	PR19	PR24	PR29	PR34	PR39	PR44
Run off - RPI %	PR14 inputs	Equalise Rev.	4.6%	4.5%	4.5%	0.0%	0.0%	0.0%
Run off - CPI %	PR14 inputs	Equalise Rev.	4.6%	4.5%	4.5%	4.5%	4.5%	4.5%

PAYG rate (Forecast scenario) Average (not weighted) PAYG rate for AMP

Forecast	Rate basis	Equalise rev.	PR19	PR24	PR29	PR34	PR39	PR44
	PR14 inputs	Equalise Rev.	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%

PR14 FD inputs, £m (assumed to be in Real 2017/18 prices)

Period	20/21	21/22	22/23	23/24	24/25	Average
PAYG revenue	4,512	4,567	4,581	4,562	4,571	4,559
Totex	8,064	8,364	8,302	8,020	7,480	8,046
Tax revenue	191	127	118	117	128	136
Other revenue	320	297	285	276	243	284
Total w/sale rev	9,856	9,879	9,908	9,943	9,965	9,910

Revenue correction / True up value (start of following AMP)

Revenue correction (discounted revenue var. b/w Forecast and Ex Post cases), £m

True-up value	PR19	PR24	PR29	PR34	PR39	PR44
	299	162	73	-	-	-

Revenue PR19, Nominal £m / Revenue correction WACC and discount rate, PR19

Period	20/21	21/22	22/23	23/24	24/25	PR19 Total
Forecast, £m	10,941	11,291	11,668	12,023	12,357	58,281
Ex post, £m	10,959	11,327	11,720	12,091	12,441	58,538
Variance, £m	18	35	52	68	83	256
WACC RPI %	3.6%	3.6%	3.6%	3.6%	3.6%	3.6%
WACC CPI %	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
Discount rate %	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%

AMP revenue by scenario, Nominal £m

To check if revenues have been equalised by adjusting the Run-off rate of PAYG rate:

	PR19	PR24	PR29	PR34	PR39	PR44
Current	-	-	-	-	-	-
Forecast	-	-	-	-	-	-
Variance	-	-	-	-	-	-

Proportion of revenue linked to RPI / CPI

Nominal revenue profile, £m

RCV balance

RCV closing balance, £m

AMP revenue, Nominal £m

	PR19	PR24	PR29	PR34	PR39	PR44
Price RPI	-	-	-	-	-	-
Price CPI	-	-	-	-	-	-
RCV RPI	-	-	-	-	-	-
RCV CPI	-	-	-	-	-	-
Total	-	-	-	-	-	-
Price RPI %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Price CPI %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RCV RPI %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RCV CPI %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

RCV balance at AMP closing, Nominal £m

	PR19	PR24	PR29	PR34	PR39	PR44
RCV Old cf - CPI	-	-	-	-	-	-
RCV New cf - CPI	-	-	-	-	-	-
RCV Old cf - RPI	-	-	-	-	-	-
RCV New cf - RPI	-	-	-	-	-	-
Total RCV	-	-	-	-	-	-

Trust in water

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2. Proportion of revenue linked to RPI/CPI – Adjusting Old RCV linked to RPI %

The Old RCV that is linked to RPI proportion (with the remaining balance of Old RCV linked to CPI) can be selected for the start of each AMP from PR19 to PR44.

Note, these inputs will only impact results for the True up and Forecast scenarios, as the Current scenario assumes 100% of the RCV is linked to RPI.

Proportion of Old RCV that is linked to RPI at the start of each AMP inputs

Select either the True-up or Forecast scenarios

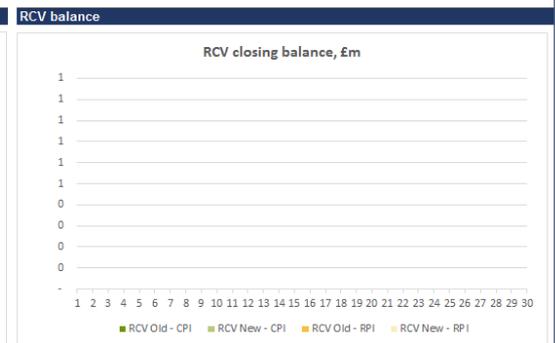
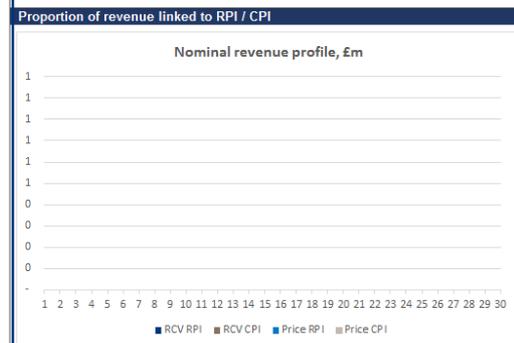
If the True-up scenario is selected the true up results will update when the % Old RCV inputs are changed. Similarly if the Forecast scenario is selected, the AMP revenues, proportion of revenue linked to RPI and CPI and RCV balance (charts and tables) updated results will display.

Dashboard *Illustrative forecasts only*

Inputs								
Select scenario True-up								
<i>If the True-up scenario is selected, the proportion of revenue linked to RPI/CPI and RCV balance will not display values</i>								
Old RCV RPI to CPI transition % - Applies to Forecast and True-up scenarios								
AMP	PR19	PR24	PR29	PR34	PR39	PR44		
RPI %	50.0%	30.0%	15.0%	0.0%	0.0%	0.0%		
RPI / CPI % - PR19 (input rates by year)								
Forecast	Average	20/21	21/22	22/23	23/24	24/25		
RPI %	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%		
CPI %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%		
Wedge %	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%		
Ex Post	Average	20/21	21/22	22/23	23/24	24/25		
RPI %	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%		
CPI %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%		
Wedge %	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%		
RPI / CPI % - PR24 to PR44 (input rates are applied to each year in the AMP)								
Forecast	Average	PR24	PR29	PR34	PR39	PR44		
RPI %	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%		
CPI %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%		
Wedge %	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%		
Ex Post	Average	PR24	PR29	PR34	PR39	PR44		
RPI %	3.1%	3.5%	3.5%	2.8%	2.8%	2.8%		
CPI %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%		
Wedge %	1.1%	1.5%	1.5%	0.8%	0.8%	0.8%		
Opening RCV and return								
2019/20 closing RCV (assumed real 2017/18 RPI linked), £m							60,640	
Wholesale WACC %							3.6%	
Run-off rate (Forecast scenario)								
Average (not weighted) run-off for AMP								
Forecast	Rate basis	Equalise rev.	PR19	PR24	PR29	PR34	PR39	PR44
Run off - RPI %	PR14 inputs	Equalise Rev.	4.6%	4.5%	4.5%	0.0%	0.0%	0.0%
Run off - CPI %	PR14 inputs	Equalise Rev.	4.6%	4.5%	4.5%	4.5%	4.5%	4.5%
PAYG rate (Forecast scenario)								
Average (not weighted) PAYG rate for AMP								
Forecast	Rate basis	Equalise rev.	PR19	PR24	PR29	PR34	PR39	PR44
	PR14 inputs	Equalise Rev.	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
PR14 FD inputs, £m (assumed to be in Real 2017/18 prices)								
Period	20/21	21/22	22/23	23/24	24/25	Average		
PAYG revenue	4,512	4,567	4,581	4,562	4,571	4,559		
Totex	8,064	8,364	8,302	8,020	7,480	8,046		
Tax revenue	191	127	118	117	128	136		
Other revenue	320	297	285	276	243	284		
Total w/sale rev.	9,856	9,879	9,908	9,943	9,965	9,910		

Revenue correction / True up value (start of following AMP)							
Revenue correction (discounted revenue var. b/w Forecast and Ex Post cases), £m							
True-up value	PR19	PR24	PR29	PR34	PR39	PR44	
	299	162	73	-	-	-	
Revenue PR19, Nominal £m / Revenue correction WACC and discount rate, PR19							
Period	20/21	21/22	22/23	23/24	24/25	PR19 Total	
Forecast, £m	10,941	11,291	11,668	12,023	12,357	58,281	
Ex post, £m	10,959	11,327	11,720	12,091	12,441	58,538	
Variance, £m	18	35	52	68	83	256	
WACC RPI %	3.6%	3.6%	3.6%	3.6%	3.6%	3.6%	
WACC CPI %	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	
Discount rate %	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	

AMP revenue by scenario, Nominal £m						
<i>To check if revenues have been equalised by adjusting the Run-off rate or PAYG rate:</i>						
	PR19	PR24	PR29	PR34	PR39	PR44
Current	-	-	-	-	-	-
Forecast	-	-	-	-	-	-
Variance	-	-	-	-	-	-



AMP revenue, Nominal £m						
	PR19	PR24	PR29	PR34	PR39	PR44
Price RPI	-	-	-	-	-	-
Price CPI	-	-	-	-	-	-
RCV RPI	-	-	-	-	-	-
RCV CPI	-	-	-	-	-	-
Total	-	-	-	-	-	-
Price RPI %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Price CPI %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RCV RPI %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RCV CPI %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

RCV balance at AMP closing, Nominal £m						
	PR19	PR24	PR29	PR34	PR39	PR44
RCV Old cf - CPI	-	-	-	-	-	-
RCV New cf - CPI	-	-	-	-	-	-
RCV Old cf - RPI	-	-	-	-	-	-
RCV New cf - RPI	-	-	-	-	-	-
Total RCV	-	-	-	-	-	-

3. True-up estimate - Adjusting RPI/CPI wedge

The Ex-Post wedge can be adjusted by adjusting the Ex-Post RPI and / or CPI annual inflation rates relative to the Forecast RPI and CPI inflation rates. The rates can be adjusted annually for PR19 and for PR24 to PR44 where the annual rates are assumed to be constant throughout the AMP period.

Provided there is a difference in the rates / wedge between the Forecast and Ex-Post scenarios, then this will result in a True-up value which will be displayed in the True-up tables on the right hand side of the Dashboard.

Ex-Post RPI and / or CPI annual inflation rates can be adjusted relative to the Forecast scenario RPI and CPI inflation rates. The example shows an Ex-Post wedge of 1.5% compared to the Forecast scenario where the wedge is 0.8% which is applied across PR19 to PR29.

The True-up value at the end of PR19 or start of PR24 is shown to be £299m, £162m at start of PR29 and £73m at the start of PR34. The True-up is not applicable to future AMPs as all of the Old RCV has transitioned to CPI by PR34 as per the proportion of Old RCV linked to RPI inputs.

Dashboard Illustrative forecasts only

Inputs

Select scenario True-up

If the True-up scenario is selected, the proportion of revenue linked to RPI/CPI and RCV balance will not display values

Old RCV RPI to CPI transition % - Applies to Forecast and True-up scenarios

AMP	PR19	PR24	PR29	PR34	PR39	PR44
RPI %	50.0%	30.0%	15.0%	0.0%	0.0%	0.0%

Revenue correction / True up value (start of following AMP)

	PR19	PR24	PR29	PR34	PR39	PR44
True-up value	299	162	73	-	-	-

Revenue correction (discounted revenue var. b/w Forecast and Ex Post cases), £m

Period	20/21	21/22	22/23	23/24	24/25	PR19 Total
Forecast, £m	10,941	11,291	11,668	12,023	12,357	58,281
Ex post, £m	10,959	11,327	11,720	12,091	12,441	58,538
Variance, £m	18	35	52	68	83	256

Revenue correction WACC and discount rate, PR19

Period	20/21	21/22	22/23	23/24	24/25	PR19 Total
WACC RPI %	3.6%	3.6%	3.6%	3.6%	3.6%	3.6%
WACC CPI %	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
Discount rate %	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%

AMP revenue by scenario, Nominal £m

To check if revenues have been equalised by adjusting the Run-off rate or PAYG rate

	PR19	PR24	PR29	PR34	PR39	PR44
Current	-	-	-	-	-	-
Forecast	-	-	-	-	-	-
Variance	-	-	-	-	-	-

RPI / CPI % - PR19 (input rates by year)

	Average	20/21	21/22	22/23	23/24	24/25
Forecast						
RPI %	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%
CPI %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Wedge %	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%
Ex Post						
RPI %	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
CPI %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Wedge %	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%

RPI / CPI % - PR24 to PR44 (input rates are applied to each year in the AMP)

	Average	PR24	PR29	PR34	PR39	PR44
Forecast						
RPI %	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%
CPI %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Wedge %	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%
Ex Post						
RPI %	3.1%	3.5%	3.5%	2.8%	2.8%	2.8%
CPI %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Wedge %	1.1%	1.5%	1.5%	0.8%	0.8%	0.8%

Opening RCV and return

2019/20 closing RCV (assumed real 2017/18 RPI linked), £m 60,640

Wholesale WACC % 3.6%

Run-off rate (Forecast scenario)

Average (not weighted) run-off for AMP:

Rate basis:	PR19	PR24	PR29	PR34	PR39	PR44
Forecast	4.6%	4.5%	4.5%	0.0%	0.0%	0.0%
Run off - RPI	PR14 inputs	Equalise Rev	4.6%	4.5%	4.5%	4.5%
Run off - CPI	PR14 inputs	Equalise Rev	4.6%	4.5%	4.5%	4.5%

PAYG rate (Forecast scenario)

Average (not weighted) PAYG rate for AMP:

Rate basis:	PR19	PR24	PR29	PR34	PR39	PR44
Forecast	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
PR14 input	Equalise Rev	56.7%	56.7%	56.7%	56.7%	56.7%

PR14 FD inputs, £m (assumed to be in Real 2017/18 prices)

Period	20/21	21/22	22/23	23/24	24/25	Average
PAYG revenue	4,512	4,567	4,581	4,562	4,571	4,559
Totex	8,064	8,364	8,302	8,020	7,480	8,046
Tax revenue	191	127	117	128	136	136
Other revenue	320	297	285	276	243	284
Total wisale rev	9,856	9,879	9,908	9,943	9,965	9,910

Revenue correction / True up value (start of following AMP)

Revenue correction (discounted revenue var. b/w Forecast and Ex Post cases), £m

	PR19	PR24	PR29	PR34	PR39	PR44
True-up value	299	162	73	-	-	-

Revenue correction WACC and discount rate, PR19

Period	20/21	21/22	22/23	23/24	24/25	PR19 Total
WACC RPI %	3.6%	3.6%	3.6%	3.6%	3.6%	3.6%
WACC CPI %	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
Discount rate %	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%

Proportion of revenue linked to RPI / CPI

Nominal revenue profile, £m

RCV balance

RCV closing balance, £m

AMP revenue, Nominal £m

	PR19	PR24	PR29	PR34	PR39	PR44
Price RPI	-	-	-	-	-	-
Price CPI	-	-	-	-	-	-
RCV RPI	-	-	-	-	-	-
RCV CPI	-	-	-	-	-	-
Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Price RPI %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Price CPI %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RCV RPI %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
RCV CPI %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

RCV balance at AMP closing, Nominal £m

	PR19	PR24	PR29	PR34	PR39	PR44
RCV Old cf - CPI	-	-	-	-	-	-
RCV New cf - CPI	-	-	-	-	-	-
RCV Old cf - RPI	-	-	-	-	-	-
RCV New cf - RPI	-	-	-	-	-	-
Total RCV	-	-	-	-	-	-

Trust in water

Official

25

4. Adjusting the run-off rate

The Model can be instructed to adjust the run-off rates. **In order to do this the Forecast scenario must be selected.**

The adjusted average AMP run-off rates will be shown and the results will display whether the revenues have been equalised.

In order for the Model to adjust the run-off rates the Forecast scenario must be selected.

In order for the Model to adjust the run-off, i) first using the drop down cell, select 'To equalise' if 'PR14 inputs' is selected, then ii) press 'Equalise rev.' on the right hand-side. The example shows that CPI run-off has been selected for adjustment.

The Forecast run-off rate is adjusted to equalise revenue which in the example below is 3.8 to 3.7% on average across each AMP.

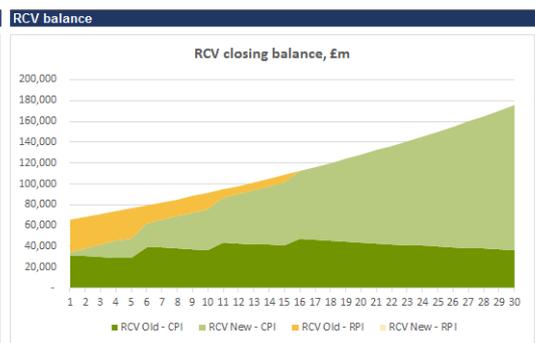
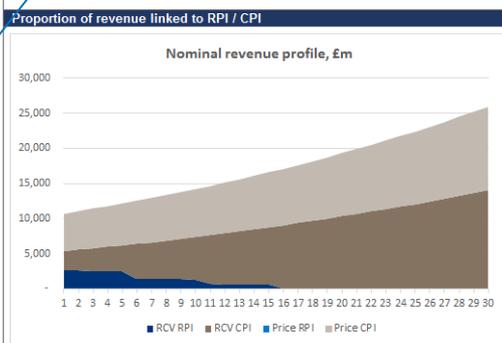
In the example below the nominal revenues for each AMP are shown to be equal i.e. no variance between the Forecast and Current scenarios.

Dashboard *Illustrative forecasts only*

Inputs								
Select scenario	Forecast							
<i>If the True-up scenario is selected, the proportion of revenue linked to RPI/CPI and RCV balance will not display values</i>								
Old RCV RPI to CPI transition % - Applies to Forecast and True-up scenarios								
AMP	PR19	PR24	PR29	PR34	PR39	PR44		
RPI %	50.0%	30.0%	15.0%	0.0%	0.0%	0.0%		
RPI / CPI % - PR19 (input rates by year)								
Forecast								
Average	20/21	21/22	22/23	23/24	24/25			
RPI %	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%		
CPI %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%		
Wedge %	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%		
Ex Post								
Average	20/21	21/22	22/23	23/24	24/25			
RPI %	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%		
CPI %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%		
Wedge %	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%		
RPI / CPI % - PR24 to PR44 (input rates are applied to each year in the AMP)								
Forecast								
Average	PR24	PR29	PR34	PR39	PR44			
RPI %	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%		
CPI %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%		
Wedge %	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%		
Ex Post								
Average	PR24	PR29	PR34	PR39	PR44			
RPI %	3.7%	3.5%	3.5%	2.8%	2.8%	2.8%		
CPI %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%		
Wedge %	1.1%	1.5%	1.5%	0.8%	0.8%	0.8%		
Opening RCV and return								
2019/20 closing RCV (assumed real 2017/18 RPI linked), £m						60,640		
Wholesale WACC %						3.6%		
Run-off rate (Forecast scenario)								
Average (not weighted) run-off for AMP:								
Forecast	Rate basis	Equalise rev.	PR19	PR24	PR29	PR34	PR39	PR44
Run off - RPI %	PR14 inputs	Equalise Rev.	4.6%	4.5%	4.5%	0.0%	0.0%	0.0%
Run off - CPI %	To equalise	Equalise Rev.	3.8%	3.7%	3.7%	3.7%	3.7%	3.7%
PAYG rate (Forecast scenario)								
Average (not weighted) PAYG rate for AMP:								
Forecast	Rate basis	Equalise rev.	PR19	PR24	PR29	PR34	PR39	PR44
Run off - RPI %	PR14 inputs	Equalise Rev.	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
PR14 FD inputs, £m (assumed to be in Real 2017/18 prices)								
Period	20/21	21/22	22/23	23/24	24/25	Average		
PAYG revenue	4,512	4,567	4,581	4,562	4,571	4,559		
Totex	8,064	8,364	8,302	8,020	7,480	8,046		
Tax revenue	191	127	118	117	128	136		
Other revenue	320	297	285	276	243	284		
Total w/sale rev.	9,856	9,879	9,908	9,943	9,965	9,910		

Revenue correction / True up value (start of following AMP)						
Revenue correction (discounted revenue var. b/w Forecast and Ex Post cases), £m						
True-up value	PR19	PR24	PR29	PR34	PR39	PR44
Forecast, £m	-	-	-	-	-	-
Ex post, £m	-	-	-	-	-	-
Variance, £m	-	-	-	-	-	-
WACC RPI %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WACC CPI %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Discount rate %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

AMP revenue by scenario, Nominal £m						
<i>To check if revenues have been equalised by adjusting the Run-off rate or PAYG rate</i>						
	PR19	PR24	PR29	PR34	PR39	PR44
Current	57,011	66,724	78,085	90,994	105,695	122,461
Forecast	57,011	66,724	78,085	90,994	105,695	122,461
Variance	-	-	-	-	-	-



AMP revenue, Nominal £m						
	PR19	PR24	PR29	PR34	PR39	PR44
Price RPI	-	-	-	-	-	-
Price CPI	28,152	32,328	37,114	42,610	48,919	56,162
RCV RPI	12,617	6,867	3,131	-	-	-
RCV CPI	16,241	27,529	37,839	48,385	56,776	66,300
Total	57,011	66,724	78,085	90,994	105,695	122,461
Price RPI %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Price CPI %	49.4%	48.4%	47.5%	46.8%	46.3%	45.9%
RCV RPI %	22.1%	10.3%	4.0%	0.0%	0.0%	0.0%
RCV CPI %	28.5%	41.3%	48.5%	53.2%	53.7%	54.1%

RCV balance at AMP closing, Nominal £m						
	PR19	PR24	PR29	PR34	PR39	PR44
RCV Old cf - CPI	28,741	36,671	40,616	43,617	39,859	36,457
RCV New cf - CPI	18,949	39,151	60,834	84,371	110,199	138,806
RCV Old cf - RPI	28,669	15,680	7,149	-	-	-
RCV New cf - RPI	-	-	-	-	-	-
Total RCV	76,360	91,503	108,600	127,988	150,058	175,263

5. Adjusting the PAYG rate

The Model can be instructed to adjust the PAYG rate. In order to do this the Forecast scenario must be selected. The adjusted average AMP PAYG rates will be shown and the results will display whether the revenues have been equalised.

In order for the Model to adjust the PAYG rate the Forecast scenario must be selected.

In order for the Model to adjust the PAYG rate, i) first using the drop down cell, select 'To equalise' if 'PR14 inputs' is selected, then ii) press 'Equalise rev.' on the right hand-side.

Average PAYG rates by AMP are displayed.

In the example below the nominal revenues for each AMP are shown to be equal i.e. no variance between the Forecast and Current scenarios.

Dashboard *Illustrative forecasts only*

Inputs
 Select scenario: Forecast

If the True-up scenario is selected, the proportion of revenue linked to RPI/CPI and RCV balance will not display values

Old RCV RPI to CPI transition % - Applies to Forecast and True-up scenarios

AMP	PR19	PR24	PR29	PR34	PR39	PR44
RPI %	50.0%	30.0%	15.0%	0.0%	0.0%	0.0%

RPI / CPI % - PR19 (input rates by year)

	Average	20/21	21/22	22/23	23/24	24/25
Forecast						
RPI %	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%
CPI %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Wedge %	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%
Ex Post						
RPI %	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
CPI %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Wedge %	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%

RPI / CPI % - PR24 to PR44 (input rates are applied to each year in the AMP)

	Average	PR24	PR29	PR34	PR39	PR44
Forecast						
RPI %	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%
CPI %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Wedge %	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%
Ex Post						
RPI %	3.1%	3.5%	3.5%	2.8%	2.8%	2.8%
CPI %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Wedge %	1.1%	1.5%	1.5%	0.8%	0.8%	0.8%

Opening RCV and return
 2019/20 closing RCV (assumed real 2017/18 RPI linked), £m: 60,640
 Wholesale WACC %: 3.6%

Run-off rate (Forecast scenario)
 Average (not weighted) run-off for AMP:

Forecast	Rate basis:	Equalise rev.	PR19	PR24	PR29	PR34	PR39	PR44
Run off - RPI %	PR14 inputs	Equalise Rev.	4.6%	4.5%	4.5%	0.0%	0.0%	0.0%
Run off - CPI %	PR14 inputs	Equalise Rev.	4.6%	4.5%	4.5%	4.5%	4.5%	4.5%

PAYG rate (Forecast scenario)
 Average (not weighted) PAYG rate for AMP:

Forecast	Rate basis:	Equalise rev.	PR19	PR24	PR29	PR34	PR39	PR44
	To equalise	Equalise Rev.	53.3%	51.6%	50.5%	49.7%	49.4%	49.1%

PR14 FD inputs, £m (assumed to be in Real 2017/18 prices)

Period	20/21	21/22	22/23	23/24	24/25	Average
PAYG revenue	4,512	4,567	4,581	4,562	4,571	4,559
Totex	8,064	8,364	8,302	8,020	7,480	8,046
Tax revenue	191	127	118	117	128	136
Other revenue	320	297	285	276	243	284
Total w/sale rev.	9,856	9,879	9,908	9,943	9,965	9,910

Revenue correction / True up value (start of following AMP)

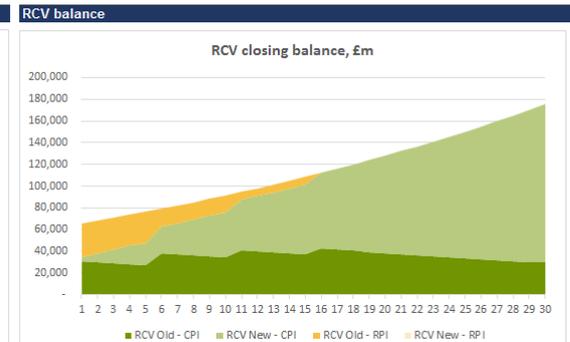
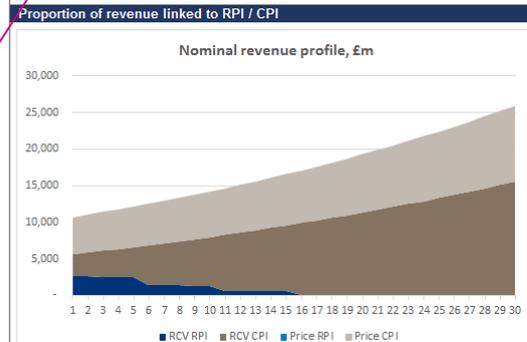
Revenue correction (discounted revenue var. b/w Forecast and Ex Post cases), £m

	PR19	PR24	PR29	PR34	PR39	PR44
True-up value	-	-	-	-	-	-
Revenue PR19	Nominal £m	Revenue correction	WACC and discount rate	PR19		
Period	20/21	21/22	22/23	23/24	24/25	PR19 Total
Forecast, £m	-	-	-	-	-	-
Ex post, £m	-	-	-	-	-	-
Variance, £m	-	-	-	-	-	-
WACC RPI %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WACC CPI %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Discount rate %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

AMP revenue by scenario, Nominal £m

To check if revenues have been equalised by adjusting the Run-off rate or PAYG rate:

	PR19	PR24	PR29	PR34	PR39	PR44
Current	57,011	66,724	78,085	90,994	105,695	122,461
Forecast	57,011	66,724	78,085	90,994	105,695	122,461
Variance	-	-	-	-	-	-



AMP revenue, Nominal £m

	PR19	PR24	PR29	PR34	PR39	PR44
Price RPI	-	-	-	-	-	-
Price CPI	26,598	29,658	33,411	37,831	43,198	49,324
RCV RPI	12,617	6,727	2,980	-	-	-
RCV CPI	17,796	30,339	41,693	53,164	62,497	73,137
Total	57,011	66,724	78,085	90,994	105,695	122,461
Price RPI %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Price CPI %	46.7%	44.4%	42.8%	41.6%	40.9%	40.3%
RCV RPI %	22.1%	10.1%	3.8%	0.0%	0.0%	0.0%
RCV CPI %	31.2%	45.5%	53.4%	58.4%	59.1%	59.7%

RCV balance at AMP closing, Nominal £m

	PR19	PR24	PR29	PR34	PR39	PR44
RCV Old cf - CPI	27,571	34,468	37,083	38,425	33,642	29,455
RCV New cf - CPI	20,119	41,674	64,713	89,563	116,415	145,808
RCV Old cf - RPI	28,669	15,361	6,805	-	-	-
RCV New cf - RPI	-	-	-	-	-	-
Total RCV	76,360	91,503	108,600	127,988	150,058	175,263

4. Appendix

Appendix – Impact of a change in the wedge on run-off

Illustrative assumptions:

The company has no expenditure, so totex is zero
 There is no tax
 Real WACC = 0%
 Company has RCV which is run off in a straight line

Period		1	2	3	4	5	6	7	8	9	10		
RCV	1000 £												
Run-off rate	10% %												
Run off per annum	100 £												
Run off per annum	100 £												
Real run-off per year		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00		
RPI	2.80% %												
Wedge	0.80% %												
CPI	2.00% %												
Licence says that income in year x equals income in year x-1 * (1+ RPI + k)													
RPI	2.80% %												
Real run-off per year	-	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00		
Nominal allowed revenue RPI		100.00	102.80	105.68	108.64	111.68	114.81	118.02	121.33	124.72	128.21		
CPI	2.00% %												
Real run-off per year	-	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00		
Nominal allowed revenue CPI (no K)		100.00	102.00	104.04	106.12	108.24	110.41	112.62	114.87	117.17	119.51		
CPI	2.00% %												
K	0.80% %	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%		
Real run-off per year	-	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00		
Nominal allowed revenue CPI (with K)		100.00	102.80	105.68	108.64	111.68	114.81	118.02	121.33	124.72	128.21		
Nominal allowed revenue RPI	0	0	0	100	102.8	105.6784	108.6374	111.6792	114.8063	118.0208	121.3254	124.7225	128.2148
Nominal allowed revenue CPI (with K)	0	0	0	100	102.8	105.6784	108.6374	111.6792	114.8063	118.0208	121.3254	124.7225	128.2148
RPI and CPI nominal revenues equal				TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE

K is equal to the forecast wedge. If the actual wedge is different to forecast, then the adjustment 'baked in' to k will be too small or too big.