ODI PAYMENT INCENTIVE RATES

A report for Welsh Water

As part of its PR19 Business Plan, Welsh Water is required to propose 'incentive payment rates' for its financial Outcome Delivery Incentives (ODIs). This short report sets out our recommended incentive rates, including both penalties and rewards; and standard / non-standard incentive rates. These incentive rates are based on the company's latest proposed performance commitments and cost estimates – and would need to be revised, should these change prior to Welsh Water's Plan being finalised. The approach we have adopted is aligned to Ofwat's published PR19 Final Methodology and guidance. There is, nonetheless, a degree of uncertainty and discretion regarding the parameters that inform the setting of incentive rates. As such, where appropriate we highlight relevant uncertainties and present 'ranges' for plausible rates. Accordingly, when determining the finalised incentive rates to use in its Plan, Welsh should take into consideration: (i) how 'stretching' it wishes this element of its Plan to be; (ii) the overall consistency of proposed incentive rates with other components of its Plan; and (iii) the overall financial risk-reward package implied within its Plan, including Ofwat's guidelines on the return on regulatory equity (RoRE) range for ODIs.

1.   Introduction

Welsh Water (Welsh) commissioned Economic Insight to develop evidence and analysis to inform the setting of its *incentive payment rates* for ODIs at PR19. Here, the scope of our work includes addressing both: (i) rewards and penalties; and (ii) standard and enhanced incentive rates (noting that enhanced rates only apply in the case of the four comparative ODIs specified by Ofwat). Accordingly, this short report sets out the results of our work – and is structured as follows:

- We first set out Ofwat's relevant guidance as to how companies should set the incentive payment rates, which we have used to inform our methodology and analysis.

- We then set out our method and results relating to the *'standard'* ODI incentive payment rates.

- Next, we describe our method and results relating to the *'enhanced'* ODI incentive payment rates.

- Finally, we present our overarching recommendations and conclusions, for Welsh to consider as it develops its PR19 Plan.

Not within the scope of our work is: (i) the calibration of ODIs with other elements of the company's Plan (e.g. totex); (ii) calibration of incentive rates against RoRE; or (iii) the forecasting of industry frontier or lower quartile benchmarks, to inform the point at which enhanced incentive rates should be applied.

2.   Ofwat's guidance

With respect to the setting of (standard) ODI incentive payment rates, Ofwat's PR19 Final Methodology contains a range of guidance for companies.[1] Here, the most important elements include the following:

- Companies can base the outperformance and underperformance incentive payment rates on the existing PR14 formula (as set out in Figure 1, overleaf). Companies can further amend this formula, to use 'alternative' customer valuations, instead of stated preference willingness to pay (WTP). The benefits valuations can also reflect wider social and environmental benefits.

- Companies can propose amendments to the above approach, if they are well supported, by high quality evidence.

- The costs used to inform the 'marginal / incremental' costs, should be 'efficient', rather than actual.

- The incentive rates should not be derived 'top-down' from a target RoRE range; but, rather, should be calculated bottom-up, as above.

- Companies should ensure that their proposed incentive rates, as a package, are consistent with Ofwat's guideline RoRE range.

- CCGs should be able to challenge companies on their proposed incentive rates.

- Finally, companies should calibrate their ODI incentives in the context of the broader package of incentives at PR19.

Regarding the penalty and reward formulae shown overleaf, companies must further assume a 'sharing rate' with customers (the 'P' value). Here, Ofwat's guidance is that this should be set at 50% by default.   Ofwat further states that, in relation to: (i) residential retail in Wales; (ii) business retail in Wales; and (iii) bioresources, the sharing rate might best be set at 0% (because these are average revenue controls).

For the subset of common ODIs that are also set on a 'comparative' basis (there are four of these) Ofwat requires companies to further submit 'enhanced' ODI incentive payment rates. Ofwat's published guidance states that the **enhanced reward** payments should apply at the **'frontier'** (leading firm) level of performance. **Enhanced penalty** rates should apply at the **'lower quartile'** of firm performance.

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[1]   *'Delivering Water 2020: Our methodology for the 2019 price review Appendix 2: Delivering outcomes for customers.' Ofwat (December 2017).*

Figure 1: Existing formula for calculating incentive payment rates

ODI underperformance = Incremental benefit – (incremental cost x p)

ODI outperformance = Incremental benefit x (1–p)

Where:

- Incremental benefit for underperformance penalties is the value *foregone* by customers for a given level of under-delivery. Incremental benefit for outperformance payments is the value that customers *gain* from a given level of over-delivery. The benefits can be measured by different customer valuation techniques.

- Companies can also include other marginal benefits in the incremental benefits part of the formula, such as **benefits to the environment,** biodiversity and natural capital, that are not captured in the other methods for customer valuations and which are appropriate to add to it.

- Incremental cost for underperformance penalties is an estimate of the expenditure, which can be avoided by the company, for the given level of under-delivery. Companies should use **forecast efficient marginal cost** levels in their estimates of incremental cost in the underperformance penalty formula.

- p = is the **customer share of expenditure** performance (this is from the totex efficiency sharing incentive). **Companies should use 50%** for 'p', unless they can provide good reasons for using a different percentage.

- Companies can use marginal or incremental values in these formulas as appropriate.

Source: Ofwat

4. Standard ODI incentive payment rates

4.1 Our methodology and approach

We developed a spreadsheet model that allows the user to calculate standard ODI incentive payment rates. The model allows the user to 'flex' key underlying assumptions, so that incentive rates are consistent with the chosen PC levels and underlying cost and benefit data. To calculate costs and benefits, the model uses the same data as the cost benefit analyses that informed the choice of PC levels.

With respect to benefits:

- Data from Welsh's WTP research is taken and converted into an incremental benefit 'per PC unit'. This gives two separate benefit estimates, corresponding to the different service increments specified in the WTP research. Which 'per unit' benefit number is used depends on the chosen PC level.

- Data from the online Measures of Service (MoS) research is converted into a £ per unit basis as well. This research also measures WTP, using a different technique, including an online survey. Again, this provides values for two service increments, in the same manner as the WTP research. The specified service increments in the MoS research are generally different to those in the WTP research.

- Consequential costs avoided are taken from Welsh Water data, and are matched to PCs in the same manner as in the cost benefit analyses (CBAs).

- A *'total benefits per unit'* figure (in £) is then calculated based on user-specified weights. Weights across the WTP and MoS benefits should sum to 100%, but there is flexibility as to how much weight is assigned to each. As they represent distinct benefits, avoided costs are consistently given 100% weights.

Incremental costs per unit are also calculated, using the same data as the CBAs. One-off capital costs are annualised, and the user can flex assumptions around asset life and cost of capital. Incremental on-going costs are assumed to be 1% of capital costs, as per the CBAs.

4.2 Incentive rate results

Using the methodology described above, Table 1 provides a summary of the implied under and outperformance incentive rates. These results reflect Welsh's current proposed PC levels, as provided to us by the company.[2] Should Welsh ultimately submit PC levels in its Plan that deviate from these, it should accordingly update the incentive rates to ensure internal consistency. As described above, our spreadsheet is designed so that Welsh can readily amend the key input assumptions, to ensure internal consistency.

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[2] *Provided to us on March 13th 2018.*

To generate indicative results, we have made the following assumptions:

- As noted above, PC levels reflect those currently proposed by Welsh.

- A customer share of expenditure performance of 50% is assumed in all cases.[3]

- Because the underlying evidence sources imply differing rates of marginal benefit, we have developed three alternate scenarios, which reflect differing 'weights' being applied to the evidence. These are indented to provide Welsh with a credible and robust range regarding its assumed incentive rates. The scenarios are as follows:

    » The low case places 25% weight on the WTP data and 75% on the MoS data.
    » The medium case places 50% weight on the WTP data and 50% on the MoS data.
    » The high case places 75% weight on the WTP data and 25% weight on the MoS data.

- Estimated WTP for water acceptability improvements was higher in the MoS data, so the above weights are reversed for this performance commitment. WTP data for rainscape are not available, so in this case the MoS data consistently received 100% weight.

- We have placed zero weight on environmental, social and health benefits in the calculation of <u>standard</u> incentive rates. Rather, consistent with the 'longer-term' nature of these benefits, they are included in the calculation of **enhanced** incentive rates.[4]

- Some PCs have negative incentive rate values attached. In these cases, benefits are low relative to costs. Where this occurred, we adjusted the costs used in the calculation, such that they equalled per unit benefits.

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[3]   *Note, as described previously, Ofwat's guidance suggests a rate of 0% should be used for residential and business retail in Wales, and for Bioresources, but the ODIs we have analysed to date do not appear to relate to these control areas.*
[4]   *The rationale being that, if enhanced rates are intended to 'drive the frontier', this would seem to be consistent with their benefits being delivered over the longer term.*

Table 1: Standard ODI incentive payment rates

ODI name	PC description	Measurement units	Underperformance penalty incentive rates (£m per measurement unit; 2017-18 CPIH deflated)			Outperformance incentive rates (£m per measurement unit; 2017-18 CPIH deflated)		
			Low case	Medium case	High case	Low case	Medium case	High case
Water supply interruptions	Average customer minutes lost to supply interruptions.	Average minutes lost	£463,010	£766,890	£1,070,770	£463,010	£766,890	£1,070,770
Leakage	Total Ml per day lost to leakage.	Ml/day	£177,315	£411,317	£683,881	£177,315	£313,597	£449,879
Pollution incidents	Number of wastewater pollution incidents.	No. incidents	£62,486	£69,311	£76,137	£62,486	£69,311	£76,137
Internal sewer flooding	Number of internal sewer flooding incidents.	No. incidents	£7,289	£8,948	£10,607	£7,289	£8,948	£10,607
External sewer flooding	Number of external sewer flooding incidents.	No. incidents	£1,852	£2,174	£2,496	£1,852	£2,174	£2,496
River water quality	Km of river improved.	Km improved	£10,039	£18,933	£27,826	£10,039	£18,933	£27,826
Rainscape	Removing surface water.	Roof equivalents	£12	£12	£12	£12	£12	£12
Water acceptability	Customer contacts relating to discolouration, taste, smell etc.	Contacts per 1,000 population	£2,166,491	£2,469,970	£2,773,450	£2,166,491	£2,469,970	£2,773,450

Source: Economic Insight analysis

5. Enhanced ODI incentive payment rates

5.1 Our methodology and approach

5.1.1 The role of enhanced incentive rates

As noted in the previous section of this report, Ofwat requires companies to propose 'enhanced' ODI payment incentive rates for the four common PCs that are based on comparative data. These are:

- water supply interruptions;
- leakage;
- internal sewer flooding; and
- pollution incidents.

Unlike in the case of 'standard' incentive rates, Ofwat's guidance is not prescriptive regarding 'how' these should be derived. However, the regulator has set out its perspective on the underlying rationale for enhanced rates, which we have used to inform our methodology – as follows:

"We want to encourage companies to improve performance beyond the best level currently achieved by any company to deliver benefits for all customers over the long term. This is likely to involve innovation and risk-taking by companies as they seek to significantly improve their performance.

Calculating outperformance and underperformance payments based purely on customer valuations does not take into account the wider benefits that customers would obtain from the kind of significant shifts in performance that would set a new benchmark for industry performance. We are therefore encouraging companies to propose higher outperformance payments for very high levels of performance against the common performance commitments – high enough, that is, to shift the industry frontier."[5]

The above passages indicate that Ofwat considers that enhanced rates are intended to encourage companies to deliver exceptional performance, which shifts the frontier (i.e. benchmark) against which other companies' performance is compared. Thus, over time, leading to improved outcomes for customers *across the industry.* The inverse logic applies to enhanced penalty rates.

5.1.2 Implication for identifying methodologies for determining enhanced incentive payment rates

From an economics perspective, the rationale for enhanced (outperformance) rates is questionable. Specifically, if a company's PC is correctly calibrated, it should reflect the optimal level of service for its customers. Consequently, it is unclear as to why companies should benefit from (and customers should pay for) performance beyond that level, particularly at a 'higher' (i.e. enhanced) rate. Further, even if that company were the leading performer in the industry (so that, as per Ofwat's reasoning, its increased performance drove the frontier), this underlying problem still holds.

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[5] *'Delivering Water 2020: Our methodology for the 2019 price review Appendix 2: Delivering outcomes for customers.' Ofwat (December 2017).*

Namely, it implies that the frontier is, itself, 'artificial'.[6] A related issue is that marginal benefits typically *decline* as service levels rise, rather than increase.

The above means that there is no 'correct' theoretical basis for identifying enhanced ODI incentive payment rates. Consequently, our approach has been to identify a range of practical methods that can be applied, and then develop ranges for the enhanced incentive rates using these, which we describe in the following subsection.

5.1.3   Our method

Following from the above, we have explored three methods to inform an assessment of the rates:

- **Utilising alternative increments, or total WTP, from Welsh's customer research.** In principle, this approach is most consistent with the rationale identified by Ofwat (i.e. that marginal benefits should 'step up' to reflect the fact that at very high levels of performance, companies could drive the industry frontier). In practice, the applicability of this method may be limited by the fact that, in most instances, one expects marginal benefit to decline with service levels. Further, Welsh's WTP and MoS research specified two service increments (SQ+1 and SQ+2). In the cases set out above, the incentive rates are calculated based on the higher SQ+1 value, as this is consistent with the specified PC level. As such, there is no higher increment that can be used.

- **Applying confidence intervals from Welsh's customer research to derive ranges for upper and lower bounds on incentive rates.** The rationale for this approach is that the reasoning for reward payments in the first place in relation to ODIs, is that there may be uncertainty as to what the 'true' economically efficient level of provision is. Accordingly, the use of confidence intervals provides an objective approach to deriving enhanced rates that is consistent with this. The downside, however, is that this approach is not related to the rationale of 'driving the frontier'.

- **Using the methodology that generates the highest benefits estimate.** The rationale for this methodology is less clear, but does ensure that a high incentive rate is generated. In all cases, this involves placing 100% weight on the WTP data, and so the results in practice are the same across the high, medium and low cases.

- **Applying 'uplifts' to the standard incentive rates.** Our third method has been to simply apply 'uplifts' to the standard rates. In the tables below, we have shown a uniform 10% uplift to standard incentive rates (including environmental benefits). Once standard incentive values have been calculated for all PCs, one could use a more advanced methodology to derive bespoke uplifts for each PC. The rationale for this is linked to the idea of 'regulatory fines'. Penalties perform a similar role to a regulatory fine, in that they punish companies when customers have been harmed by a firm's performance. In practice, common levels of fine for material regulatory breaches are in the region of 5%-10% of turnover. One could therefore assign each PC its own uplift by calculating 5%-10% of wholesale

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[6] *For example, in a competitive market, if a firm provided a level of service 'beyond' what its customers were willing to pay for, that firm would not have 'raised the benchmark' for its rivals within the market it operates in. Rather, that firm would ultimately not be economically profitable.*

turnover, and then disaggregating this across the PCs, in proportion with their benefit estimates.

Across these methodologies, we have also included estimates of environmental, social and health benefits, where appropriate. As we set out above, the longer-term nature of these benefits is likely to be better suited to the purpose of enhanced incentives. We note that this means, in practice, percentage uplifts are applied to the standard incentive rate, *plus* the estimate of environmental, social and health benefits.

5.2 Results

Using the methodology described above, the following two tables show the implied enhanced incentive rates for the four common, comparative, ODIs.

Table 2: **Enhanced** ODI **penalty** incentive payment rates

ODI name	PC description	Units	Underperformance penalty incentive rates – low case (£m per measurement unit; 2017-18 CPIH deflated)				Underperformance penalty incentive rates – medium case (£m per measurement unit; 2017-18 CPIH deflated)				Underperformance penalty incentive rates – high case (£m per measurement unit; 2017-18 CPIH deflated)			
			Standard penalty rate (low case)	Enhanced penalty rate: Confidence intervals	Enhanced penalty rate: Maximum method-ology	Enhanced penalty rate: Percentage uplift	Standard penalty rate (medium case)	Enhanced penalty rate: Confidence intervals	Enhanced penalty rate: Maximum method-ology	Enhanced penalty rate: Percentage uplift	Standard penalty rate (high case)	Enhanced penalty rate: Confidence intervals	Enhanced penalty rate: Maximum method-ology	Enhanced penalty rate: Percentage uplift
Water supply interruptions	Average customer minutes lost to supply interruptions.	Average minutes lost.	£463,010	£1,490,456	£2,508,497	£1,443,911	£766,890	£1,842,306	£2,508,497	£1,750,830	£1,070,770	£2,214,300	£2,508,497	£2,057,749
Leakage	Total Ml per day lost to leakage.	Ml/day.	£177,315	£265,321	£958,854	£180,304	£411,317	£651,197	£958,854	£417,863	£683,881	£1,037,072	£958,854	£693,152
Pollution incidents	Number of wastewater pollution incidents.	Number of wastewater pollution incidents.	£62,486	£88,363	£100,776	£79,102	£69,311	£96,356	£100,776	£85,995	£76,137	£104,348	£100,776	£92,889
Internal sewer flooding	Number of internal sewer flooding incidents.	Number of internal sewer flooding incidents.	£7,289	£37,775	£41,826	£37,217	£8,948	£39,857	£41,826	£38,893	£10,607	£41,939	£41,826	£40,569

Source: Economic Insight analysis

Table 3: **Enhanced** ODI **outperformance** incentive payment rates

ODI name	PC description	Units	Outperformance incentive rates – **low case** (£m per measurement unit; 2017-18 CPIH deflated)				Outperformance incentive rates – **medium case** (£m per measurement unit; 2017-18 CPIH deflated)				Outperformance incentive rates – **high case** (£m per measurement unit; 2017-18 CPIH deflated)			
			Standard out-perform rate (low case)	Enhanced out-perform rate: Confidence intervals	Enhanced out-perform rate: Maximum method-ology	Enhanced out-perform rate: Percentage uplift	Standard out-perform rate (medium case)	Enhanced out-perform rate: Confidence intervals	Enhanced out-perform rate: Maximum method-ology	Enhanced out-perform rate: Percentage uplift	Standard out-perform rate (high case)	Enhanced out-perform rate: Confidence intervals	Enhanced out-perform rate: Maximum method-ology	Enhanced out-perform rate: Percentage uplift
Water supply interruptions	Average customer minutes lost to supply interruptions.	Average minutes lost.	£463,010	£1,490,456	£2,341,255	£1,443,911	£766,890	£1,842,306	£2,341,255	£1,750,830	£1,070,770	£2,194,156	£2,341,255	£2,057,749
Leakage	Total Ml per day lost to leakage.	Ml/day.	£177,315	£240,599	£587,365	£180,304	£313,597	£433,537	£587,365	£317,949	£449,879	£626,474	£587,365	£455,594
Pollution incidents	Number of wastewater pollution incidents.	Number of wastewater pollution incidents.	£62,486	£88,363	£100,776	£79,102	£69,311	£96,356	£100,776	£85,995	£76,137	£104,348	£100,776	£92,889
Internal sewer flooding	Number of internal sewer flooding incidents.	Number of internal sewer flooding incidents.	£7,289	£37,775	£41,826	£37,217	£8,948	£39,857	£41,826	£38,893	£10,607	£41,939	£41,826	£40,569

Source: Economic Insight analysis

6.   Conclusions and recommendations

- There is, in our view, considerable uncertainty around the setting of ODI incentive payment rates. This arises due to the inherent complexities around measuring customers' valuations and in identifying marginal costs of incremental performance improvements. As such, whilst we are confident that the analysis and results set out here are consistent with Ofwat's methodology, it would clearly be possible to make alternative assumptions, or apply differing interpretations to data, and arrive at different implied incentive rates (that would be equally defendable).

- In addition to the above, there are good reasons to suppose that, across the industry, there will be considerable variation in proposed incentive rates for identical / similar outcomes. Again, this could arise for a range of reasons – not least because each companies' customer research will be different. For example, at PR14 the variance across companies in relation to ODI PCs and incentive rates was substantial, resulting in Ofwat making a large number of significant interventions, to adjust company plans.   Whilst at PR19, this might be mitigated (because there is more data available, and because companies have made improvements to measurement), it seems plausible that ex post adjustments by the regulator will still be required.

- Reflecting the above issues, in this report we have provided Welsh with plausible ranges to inform the setting of its ODI payment incentive rates. When determining the finalised set of rates to use in its Plan (e.g. 'where' in our range to pick, or what weight to place on other evidence), Welsh should further take into account: (i) how 'stretching' it wishes this element of its Plan to be; (ii) the overall consistency of proposed incentive rates with other components of its Plan; and (iii) the overall financial risk-reward package implied within its Plan, including Ofwat's guidelines on the RoRE range for ODIs.

- As Welsh continues to develop its Plan for PR19, we would recommend that additional evidence it considers to help inform the setting of incentive rates (and to complement the analysis contained here) could include:

    - a comparative analysis of incentive rates at PR14 (where feasible and appropriate);
    - RoRE risk analysis (i.e. the scenarios specified by Ofwat); and
    - calibration of ODI RoRE ranges relative to other aspects of the company's Plan.

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