

By email: CostAssessment@ofwat.gov.uk

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12th May 2023

Dear Daniel,

Econometric Base Cost Models for PR24 – Consultation Response

We provide comments on a number of key aspects of the econometric models released for consultation below.

Average Pumping Head

We strongly disagree with the proposed approach to including average pumping head (APH) in treated water distribution or wholesale water models, not least because its inclusion would not be consistent with Ofwat's Principles of PR24 Base Cost Assessment. Specifically:

- Principle 1 – Data used in our base cost assessment is good quality

The inclusion of APH would be inconsistent with the principle that cost assessments should be based on data that is of good quality.

We note that Ofwat is concerned about the consistency and quality of APH data. Ofwat's supporting consultants, Turner and Townsend, highlighted widespread use of estimates for volume and lift in the context of APH reporting which are frequently prepared on the basis of the least appropriate¹ methods.² Turner and Townsend further explained that the risks tend towards overstatement of APH. We share these concerns and consider them sufficient to disqualify the use of APH under Principle 1.

Moreover, we do not consider that the quality of APH data has improved. The consultation outlines that Ofwat has worked with the industry to review reporting practices, improve consistency of reporting across companies and suggests that APH data quality is improving. However, this disregards the fact that the majority of the cost assessment dataset (i.e. relating to the period 2011-12 to 2020-21 inclusive) *pre-dates* the 5th May 2022 publication of improvement recommendations. As a

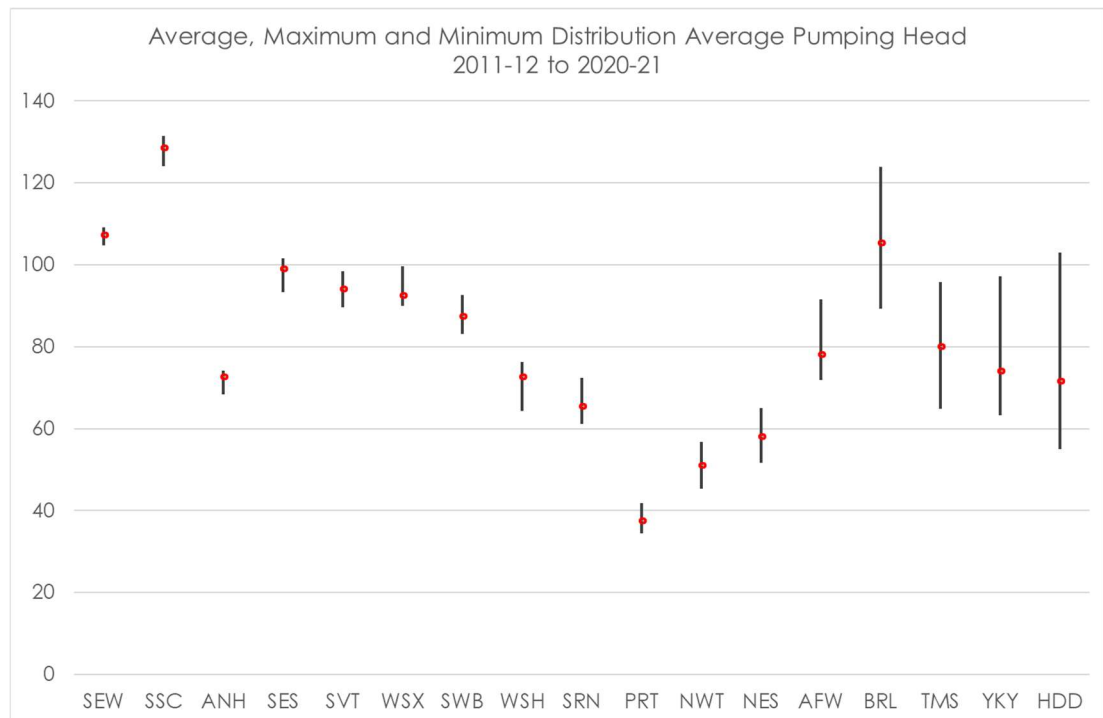
¹ For example in Treated Water Distribution "Lift", more than a third of companies - 7 out of 17 - were using an estimation method scored as 6 or 7 on a scale of 1-8, where 1 was the most appropriate estimation method and 8 the least appropriate.

² 24th March 2022 - Turner and Townsend – Average Pumping Head : data quality improvement p.6 – least appropriate methods included 'use of pump base plate information' and 'company standard head losses'

result, the **APH data in at least 11 out of the 12 years in the sample for the period up to 2021-22 remains unimproved**, undermining the adequacy of models estimated based on those data.

As highlighted in our response to *Assessing Base Costs*³, if APH measures are intended to reflect topography, significant year on year variation would not be expected. Topography does not vary year on year and water supply networks develop slowly. The diagram below, extracted from Ofwat's Master Dataset v4, shows the maximum, minimum and mean treated water distribution APH for each company over the period 2011-12 to 2020-21. A range of around 10-15% appears typical but there are a number of disquietingly large outliers where variation is more marked.

The excess variation indicates changing methodologies and approaches to calculation and reporting over time. It intensifies doubts about the suitability of this data both for parameter estimation and prediction. Accurate cost prediction would require accurate prediction of APH. It is difficult to have confidence in APH predictability given the stark variability observable in historic data series.



- Principle 7 – A coherent cost assessment approach that drives the right incentives

³ 3rd February 2022 - Affinity Water – Assessing base costs at PR24

The inclusion of APH would be inconsistent with the principle that a cost assessment approach should drive the right incentives.

Overall, companies should be incentivised to reduce pumping head as this implies lower energy use, fewer GHG emissions and lower costs for customers. Companies can reduce pumping head through pressure management and by improving network configuration over time to reduce head losses. Including APH as a cost driver creates dis-incentives to seeking such improvements and hampers efforts to reach sustainable outcomes for both customers and the environment.

The proposal to include APH as a cost driver seems at odds with driving the right incentives, and so is incompatible with Principle 7.

- Principle 4 – Focus on exogenous cost drivers

The inclusion of APH would be inconsistent with the principle that the focus should be on exogenous cost drivers.

Whilst topography is exogenous, the APH data that are intended to reflect topography are not necessarily themselves exogenous. As noted, it is common for APH data to be based on estimates of volume and lift. The choice of estimation methods, assumptions and approaches are within the control of companies.

Moreover, there are actions companies can take (or choose not to take) to manage head losses over time. For these reasons distribution APH is not a truly exogenous cost driver.

- Principle 5 – Robust econometric models

The inclusion of APH would also be inconsistent with the principle that econometric cost models should accurately predict and forecast efficient costs and be robust to scrutiny.

Ofwat argues that inclusion of APH in treated water distribution models increases their explanatory power. Appendix A2 shows that Ofwat assesses model power primarily with the Adjusted R-squared measurement and secondarily, with efficiency score distribution. We agree that adjusted R-squared increases and that the efficiency range narrows when APH is used in the treated water distribution models.

However, different results are observed at the wholesale water level. Adjusted R-squared increases in only 2 out of 6 cases, and the efficiency range is narrowed in only half of the cases. The benefits of increased predictive power seen in the bottom-up model are not consistently repeated in top-down modelling.

To satisfy this principle, econometric improvements should be seen consistently across both top down and bottom up approaches. Given the issues highlighted

above, that is not the case in relation to APH, and therefore it cannot be regarded as being robust as required under Principle 5.

As is clear from the above, the inclusion of APH is not consistent with over half of Ofwat's Principles of PR24 Base Cost Assessment. On that basis, it would not be reasonable for Ofwat to allow the inclusion of APH, and we strongly recommend that Ofwat discontinue the use of distribution APH.

Density Variable

The consultation sets out three approaches to measuring density. Of these, the most reasonable approach is the LAD approach, which provides continuity with PR19 methods.

We note that the MSOA approach appears to increase the predicted efficiency range. Efficiency range is one of Ofwat's model assessment criteria, so MSOA would seem to underperform compared to alternatives.

The consultation shows that in submitting models in January 2023, most companies favoured the LAD approach to measuring density. Support for the MSOA or properties per length of main approaches was limited.

Retail Models

We note that Ofwat has sought to model perturbations in retail bad debt costs through use of dummy variables in years 2019/20 and 2020/21. It hypothesises that this reflects pandemic effects.

We are concerned that, with this approach, the dummy variables may act to over-estimate pandemic effects because with pandemic uncertainties, some companies will have 'over-provided' against bad debt in the pandemic years. Dummy variables are simply on or off so represent crude measurements of the cost drivers of interest and do not distinguish between efficient provisioning and over-provisioning.

The principle of dummy variables is also problematic as it requires judgement as to what are the significant external events worthy of modelling with dummy variables, versus what are not. For instance, why should there not also be dummy variables for cost of living crisis affected years?

For these reasons we support Ofwat's conclusion that it should revisit the inclusion of pandemic dummy variables in the light of 2022/23 and 2023/24 outturn data.

Energy Prices

Since the January 2023 company submissions of proposed models, and as our business planning has developed, we have become increasingly concerned that backward looking base models will not reflect (and are incapable of reflecting) recent increases in

energy prices, and indeed that such an approach would fail to take account of economic realities. This is on the basis of a number of factors, including:

- The fact that 11 out of 12 years' observations in the current dataset reflect more benevolent energy market conditions than are seen today.
- Allowed costs predicted based on observations made in benign years will understate base expenditure relative to the costs of inputs seen today.

As a result, any solely backward looking base models approach in the context of energy costs would be wholly unreasonable, not least given that energy costs account for a significant proportion of our costs and total industry costs.

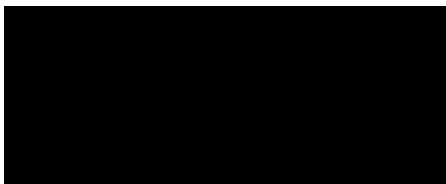
Given the fundamental importance of this issue, and working with other water companies, we commissioned KPMG to provide recommendations for appropriate regulatory recognition and treatment of energy costs.

The report (attached) supports the conclusion that **the econometric models are likely to significantly under-estimate the base cost** starting point from which efficiency challenge, RPEs and frontier shift is projected.

The report highlights a number of ways in which to address this issue in a pragmatic and proportionate way, including the inclusion of an energy price index as an explanatory variable, or pre-adjustment of costs prior to modelling.

We strongly support the conclusions of the KPMG report and consider it would be poor regulatory practice for Ofwat to ignore the issue. We therefore urge Ofwat to consider the implications of energy market turbulence in this context, and indeed consider that it would be unreasonable for Ofwat not to do so.

Yours sincerely,



Martin Hall
Head of Economic Regulation