Appendix 8c:
Setting our cost efficiency challenge

Author: Yorkshire Water

YorkshireWater

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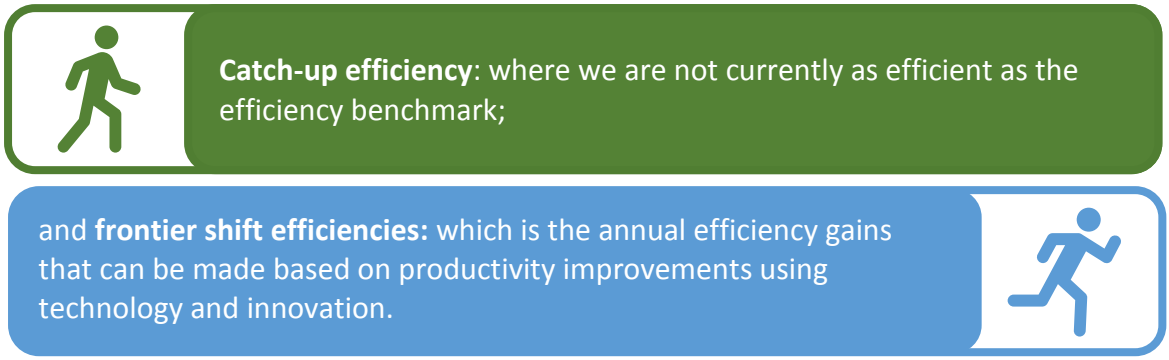
Setting our cost efficiency challenge

1. Summary

This appendix compares our total efficiency challenges that we have embedded within our plan by price control to the industry and cross-sector benchmarking evidence developed by Economic Insight and Oxera. We have shown our efficiencies as total efficiencies where we have combined both:



In comparing the evidence commissioned as part of our plan with the challenges we have embedded within it we are intending to evidence that our efficiency challenges are ambitious and realistic when considered against the assessments we have commissioned. The summary of the findings shown in table 1 is that:

- In 3 out of 5 price control areas, which covers over 95% of our planned wholesale totex (Water Network plus, Wastewater Network Plus, and Bioresources), our efficiency challenges are consistent with meeting a **frontier efficiency benchmark**;
- for residential Retail, our efficiency challenge is consistent with meeting at least an **upper quintile efficiency benchmark**; and,
- for Water Resources, our efficiency challenge is worth nearly 8% over the price control period.

Table 1: Overview of efficiency targets

Price control	Target efficiency	Benchmark		
		Upper quartile	Upper quintile	Frontier
Water Resources	7.4%			
Water Network Plus	14.3%	●	●	●
Wastewater Network Plus	13.8%	●	●	●
Bioresources	23.3%	●	●	●
Retail	10.0%	●	●	

For ease of reference the documents that we have drawn upon in developing this document are:

- *Appendix 8a: Wholesale and cross-sector efficiency benchmarking and triangulation*, Economic Insight, June 2018
- *Appendix 8b: Household retail efficiency benchmarking and triangulation*, Economic Insight, June 2018
- *Appendix 8e: Cross-sector benchmarking of bad debt*, Economic Insight, June 2018
- *Appendix 8n: The scope for frontier shift at PR19, Economic Insight*, February 2018

Within the main body of this document we reference the appropriate sections of these reports that have been used to compound the various elements of efficiencies allowing us to compare this to our embedded efficiency challenges in our PR19 plan.

2. Water Resources

We have established our total efficiency challenge at 7.4% in Water Resources. This has been embedded within our water resource plan.

Based on an upper quartile catch-up efficiency benchmark, the evidence suggests that a total efficiency savings of between 12.2% and 37.6% could be achievable where both catch-up and frontier shift efficiencies are included. We have shown this below in figure 1 and referenced the ranges and splits between catch-up and frontier in table 2, which also provides a reference to the evidence used in developing the benchmark ranges.

Our embedded challenge does not fit within the range of benchmarked total efficiencies for water resources. Our analysis of the Water Resources benchmarking models which we submitted in response to Ofwat's consultation[1] suggests that there are significant limitations with using modelling at the water resources level of aggregation. Additionally, Economic Insight also concluded that *"…models at the lower levels of aggregation are less reliable than models at the higher levels of aggregation*"[2] which is additionally a view shared by several other respondents to the consultation on cost modelling at PR19. Based on this we do not think that the benchmarking models provide a good guide as to whether our efficiency target is too high or too low and we have embedded an efficiency challenge which we believe is stretching, realistic and appropriate for our operating circumstances.

It should be noted that whilst for water resources our challenge is below the range from analysis, we have checked that the combined efficiency target for the water service (i.e. across the Network plus and Resources controls combined) is in line with the benchmarking evidence. As set out in Section 4 below, our combined efficiency target is consistent with meeting a frontier efficiency challenge in the water service as a whole.

[1] https://www.ofwat.gov.uk/wp-content/uploads/2018/03/YKY-consultation-response.pdf

[2] Appendix 8a: Wholesale and cross-sector efficiency benchmarking and triangulation, Economic insight, Annex A.

Figure 1: Water resources efficiency challenge

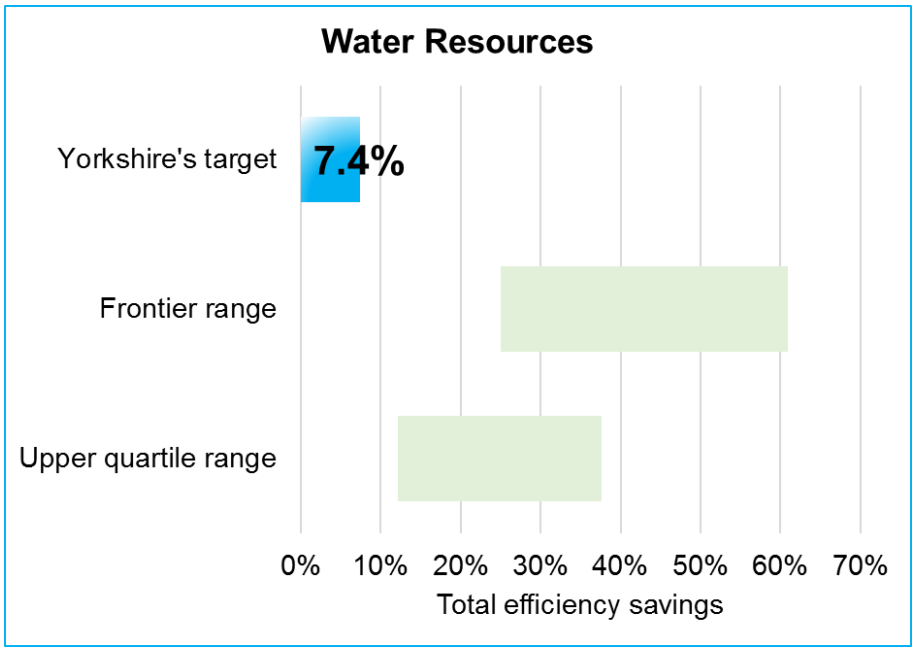


Table 2: Water resources – Upper Quartile (UQ) efficiency challenge

	Min	Max	Central	Source
Catch-up	12.9%	35.1%	21.0%	Wholesale and cross-sector efficiency benchmarking and triangulation, page 15.
Frontier shift	-0.7%	3.9%	2.1%	The scope for frontier shift at PR19, pages 15-17.
Total	12.2%	37.6%	22.6%	

3. Water Network Plus

Our total efficiency challenge for our water network plus price control is 14.3%. Based on the industry benchmarking evidence it is suggested that total efficiency savings, which includes both catch-up and frontier efficiencies, of:

- up to 6.9% could be achievable based on an upper quartile efficiency challenge; and
- between -0.5% and 18.8% based on a frontier efficiency challenge.

Therefore, based on the evidence compiled, our target is consistent with meeting a frontier efficiency benchmark for PR19. In figure 2 we have shown how our challenge compares against the ranges developed based on both upper quartile and frontier benchmark assessment. Additionally, in table 2A and B we have broken down these benchmark ranges into catch-up and frontier shift elements of efficiency citing the sources of the evidence used to develop these ranges.

The cross-sector benchmarking evidence shows that our target exceeds the Real Unit Operating Expenditure (RUOE) reductions in several other sectors between 2011-12 to 2016-17, including:

- Electricity distribution (worth 10.7% over five years) and transmission (RUOE has increased);
- Airports (9.7% over five years); and
- Rail (7.0% over five years).[3]

[3] Appendix 8a: Wholesale and cross-sector efficiency benchmarking and triangulation, Economic Insight, Section 5.

Figure 2: Water network plus efficiency challenge

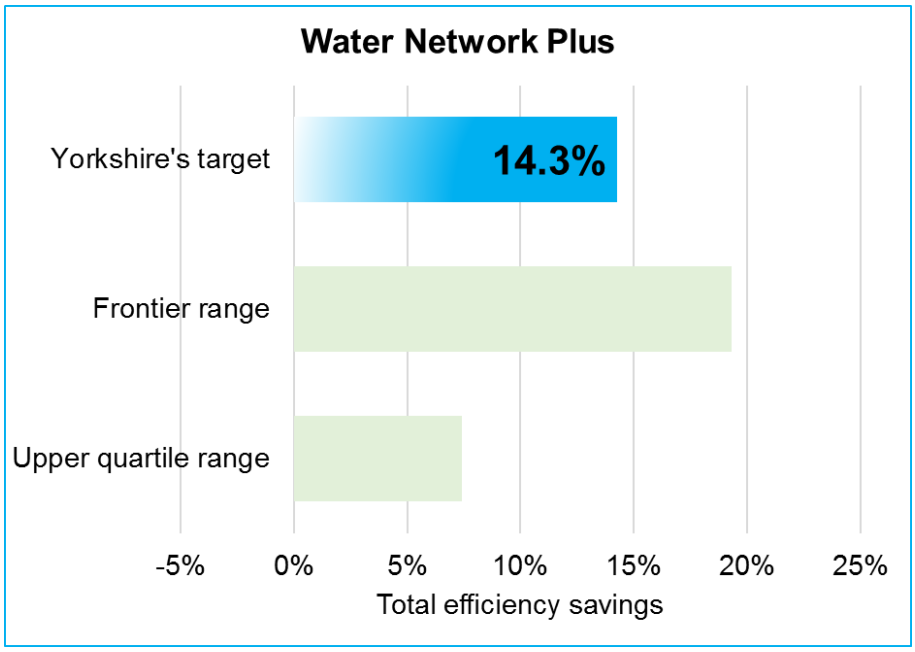


Table 3A: Water Network Plus – UQ efficiency challenge

	Min	Max	Central	Source
Catch-up	0.0%	2.9%	0.2%	Wholesale and cross-sector efficiency benchmarking and triangulation, page 14.
Frontier shift	-0.5%	4.1%	2.5%	The scope for frontier shift at PR19, pages 15-17.
Total	-0.5%	6.9%	2.6%	

Table 3B: Water Network Plus – Frontier efficiency challenge

	Min	Max	Central	Source
Catch-up	0.0%	15.3%	4.8%	Wholesale and cross-sector efficiency benchmarking and triangulation, page 14.
Frontier shift	-0.5%	4.1%	2.5%	The scope for frontier shift at PR19, pages 15-17.
Total	-0.5%	18.8%	7.1%	

4. Water service (Network Plus and Resources)

Our combined (weighted average) total efficiency challenge across both water resources and water network plus is 13.5%. This has been embedded within our plan and based on a frontier efficiency benchmark, the models suggest that combined total efficiency savings of:

- between 2.3% and 23.4% could be achievable using the efficiency challenges from the price control models, weighted by Yorkshire's planned totex expenditure; and
- between -0.6% and 23.3% could be achievable using the efficiency challenges from the water service level models.

This places our combined total efficiency challenge for the water service within the range of a frontier efficiency benchmark. This is necessary, as modelling at an aggregate level provides more robust results and therefore, ensures that our overall water efficiency challenge embedded within our plan resides within the output from these models. This is important to ensure that we are delivering the best value services to our customers.

To summarise, figure 3 shows our efficiency challenge for water service compared to the two frontier ranges based on different levels of model aggregation. We have provided further granularity in tables 4A and B which breaks these ranges down by frontier and catch-up efficiencies and with references to the analysis which has been used to develop the ranges to assess our efficiency challenges against.

Figure 3: Our combined water service efficiency challenge

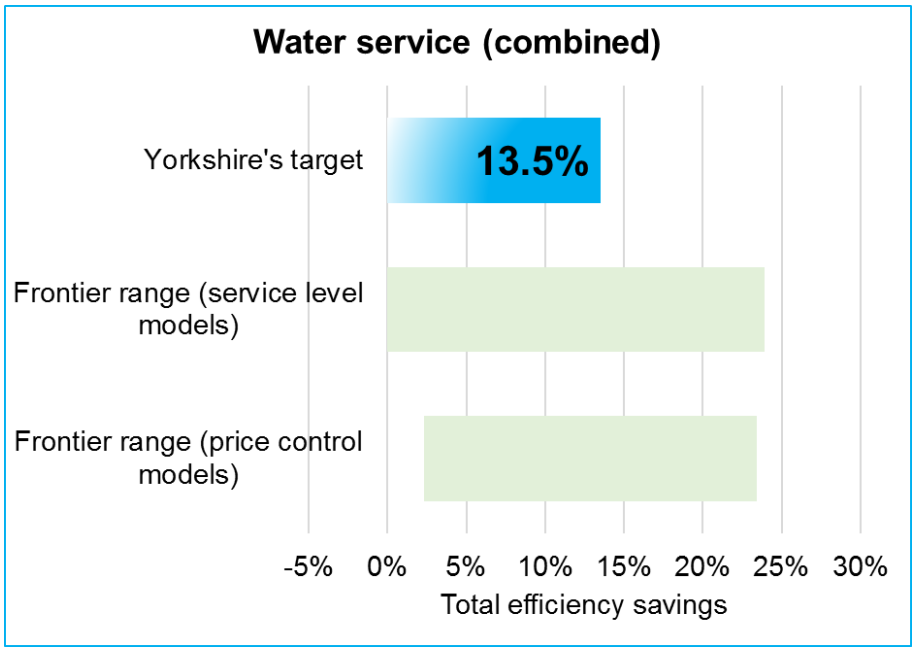


Table 4A: Water service frontier efficiency challenge – PRICE CONTROL MODELS

	Min	Max	Central	Source
Catch-up	2.8%	20.1%	8.6%	Wholesale and cross-sector efficiency benchmarking and triangulation, pages 14 and 15 (derived).
Frontier shift	-0.6%	4.1%	2.4%	The scope for frontier shift at PR19, pages 15-17.
Total	2.3%	23.4%	10.9%	

Table 4B: Water service frontier efficiency challenge – SERVICE LEVEL MODELS

	Min	Max	Central	Source
Catch-up	0.0%	20.1%	6.1%	Wholesale and cross-sector efficiency benchmarking and triangulation, page 13.
Frontier shift	-0.6%	4.1%	2.4%	The scope for frontier shift at PR19, pages 15-17.
Total	-0.6%	23.3%	8.4%	

5. Wastewater Network plus

For wastewater network plus we have included a 13.8% total efficiency challenge which includes both catch-up and frontier shift efficiencies. The industry benchmarking evidence suggests that a total efficiency savings of:

- up-to 7.6% could be achievable based on an upper quartile efficiency benchmark; and
- between -0.6% and 19.3% based on a frontier efficiency assessment.

Therefore, our target is consistent with meeting a frontier efficiency challenge on this evidence. Additionally, as noted in Section 3 above, the cross-sector evidence shows again that our target exceeds the RUOE reductions in several other sectors between 2011-12 to 2016-17.

Further to this in figure 4 we directly compare the efficiency challenge embedded within our plan for wastewater network plus against the ranges established for upper quartile and frontier benchmarks. In tables 5A and B this is divided into the catch-up and frontier shift elements of those ranges, including references to the sections of the analysis used to develop these ranges.

Figure 4: Wastewater network plus efficiency challenge

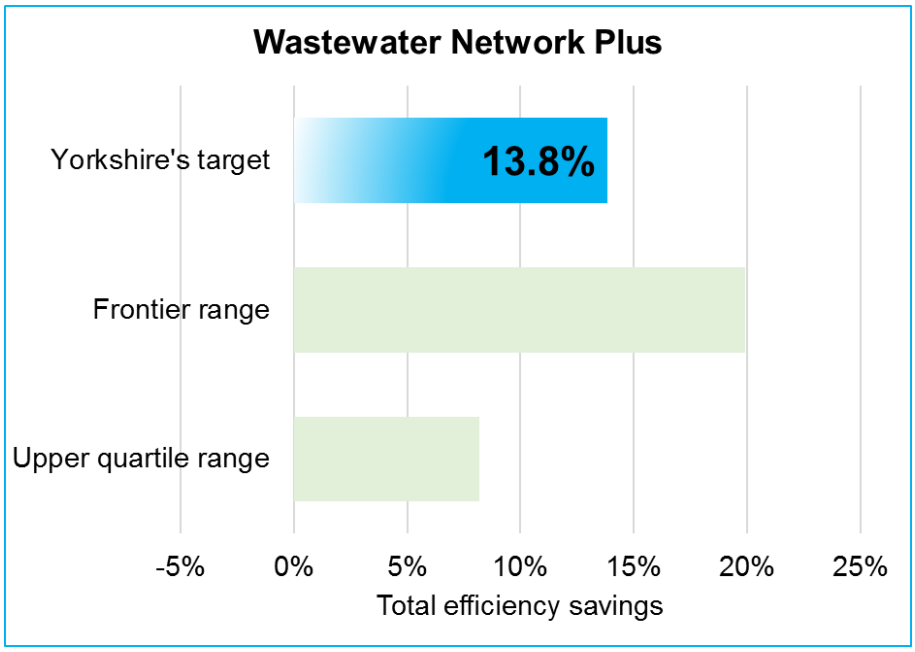


Table 5A: Wastewater network plus – UQ efficiency challenge

	Min	Max	Central	Source
Catch-up	0.0%	3.7%	0.3%	Wholesale and cross-sector efficiency benchmarking and triangulation, page 19.
Frontier shift	-0.6%	4.0%	2.4%	The scope for frontier shift at PR19, pages 15-17.
Total	-0.6%	7.6%	2.7%	

Table 5B: Wastewater network plus – Frontier efficiency challenge

	Min	Max	Central	Source
Catch-up	0.0%	15.9%	4.3%	Wholesale and cross-sector efficiency benchmarking and triangulation, page 19.
Frontier shift	-0.6%	4.0%	2.4%	The scope for frontier shift at PR19, pages 15-17.
Total	-0.6%	19.3%	6.6%	

6. Bioresources

Our total efficiency challenge embedded in our plan for Bioresources is 23.3%. This includes both frontier shift and catch-up efficiencies. The within-sector benchmarking evidence suggests that total efficiency savings of:

- up-to 29.3% could be achievable based on an upper quartile efficiency benchmark; and
- between 11.5% and 35.9% based on a frontier efficiency assessment.

Therefore, our target is consistent with meeting a frontier efficiency challenge on this evidence. Whilst our reservations about modelling at this disaggregated level are the same as for water resources the issues relating to model stability appear to be less pronounced on the wastewater side. Additionally, it is clearer that our performance is less efficient than other companies, especially when compared to this AMP where we have significant operational issues relating to flooding impacting on our bioresource assets.

As noted in Section 3 above, the cross-sector evidence shows again that our target exceeds the RUOE reductions in several other sectors between 2011-12 to 2016-17.

In figure 5 we directly compare the efficiency challenge embedded within our plan for bioresources against the ranges established for upper quartile and frontier benchmarks. In tables 6A and B this is divided into the catch-up and frontier shift elements of those ranges, including references to the sections of the analysis used to develop these ranges.

Figure 5: Bioresources efficiency challenge

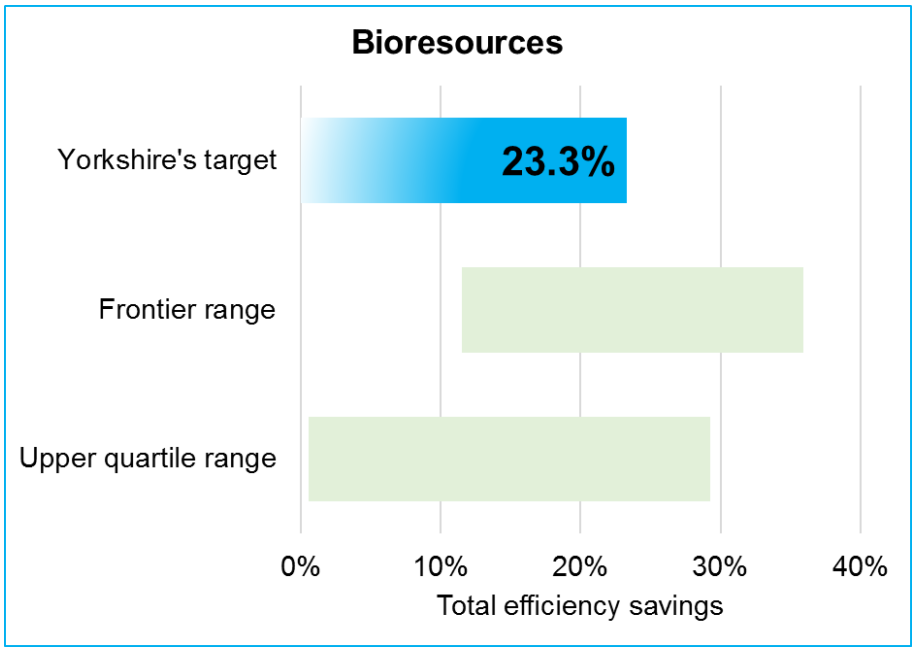


Table 6A: Wastewater Bioresources – UQ efficiency challenge

	Min	Max	Central	Source
Catch-up	1.6%	26.8%	14.3%	Wholesale and cross-sector efficiency benchmarking and triangulation, page 20.
Frontier shift	-1.0%	3.5%	2.0%	The scope for frontier shift at PR19, pages 15-17.
Total	0.6%	29.3%	16.0%	

Table 6B: Water Bioresources – Frontier efficiency challenge

	Min	Max	Central	Source
Catch-up	12.4%	33.6%	23.5%	Wholesale and cross-sector efficiency benchmarking and triangulation, page 20.
Frontier shift	-1.0%	3.5%	2.0%	The scope for frontier shift at PR19, pages 15-17.
Total	11.5%	35.9%	25.0%	

7. Wastewater service (Network Plus and Bioresources)

Our combined (weighted average) total efficiency challenge across both Wastewater Network Plus and Bioresources is 15.1%.

Based on a frontier efficiency benchmark, the models suggest that combined total efficiency savings of:

- between 1.0% and 21.5% could be achievable using the efficiency challenges from the price control models, weighted by Yorkshire's planned totex expenditure; and
- between -0.2% and 14.9% could be achievable using the efficiency challenges from the water service level models.

Therefore, our combined total efficiency challenge, which includes both catch-up and frontier shift efficiency, for the wastewater service is consistent with a frontier efficiency benchmark. To summarise, figure 6 shows our efficiency challenge for wastewater service compared to the two frontier ranges based on different levels of model aggregation. We have provided further granularity in tables 7A and B which divides these ranges into frontier and catch-up efficiencies and with references to the analysis which has been used to develop the ranges to assess our efficiency challenges against.

Figure 6: Our combined wastewater service efficiency challenge

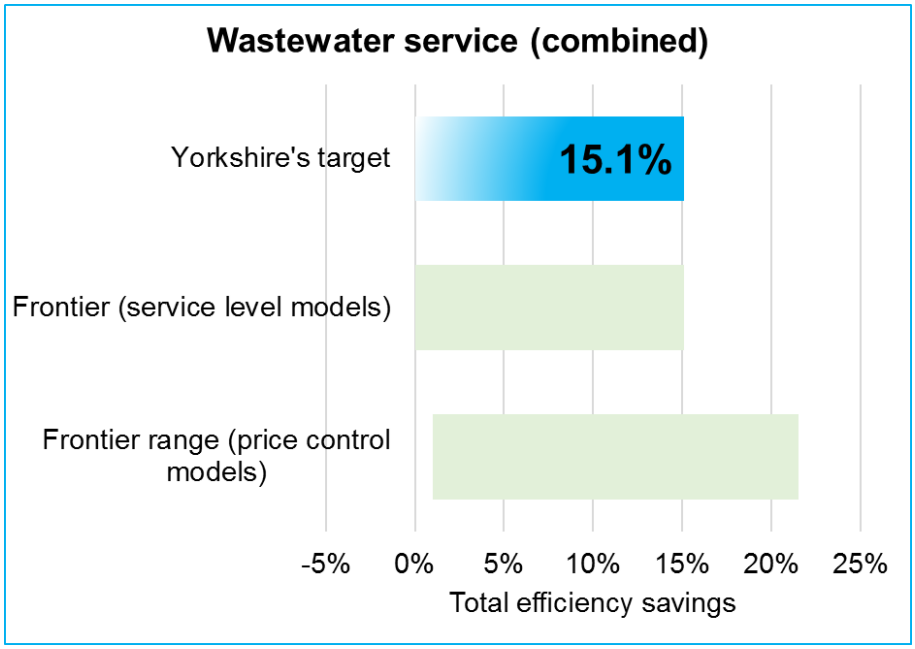


Table 7A: Wastewater service frontier efficiency challenge – PRICE CONTROL MODELS

	Min	Max	Central	Source
Catch-up	1.7%	18.3%	6.9%	Wholesale and cross-sector efficiency benchmarking and triangulation, pages 19 and 20 (derived).
Frontier shift	-0.7%	3.9%	2.3%	The scope for frontier shift at PR19, pages 15-17.
Total	1.0%	21.5%	9.1%	

Table 7B: Wastewater service frontier efficiency challenge – SERVICE LEVEL MODELS

	Min	Max	Central	Source
Catch-up	0.4%	11.4%	6.1%	Wholesale and cross-sector efficiency benchmarking and triangulation, page 18.
Frontier shift	-0.7%	3.9%	2.3%	The scope for frontier shift at PR19, pages 15-17.
Total	-0.2%	14.9%	8.3%	

8. Retail

We have challenged ourselves to deliver a total efficiency of 10.0% in our residential retail plan. This includes both catch-up and frontier shift efficiencies and have been including in our developing our strategy for PR19.

Based on an upper quintile efficiency benchmark, the models suggest that total efficiency savings of:

- between -2.1% and 22.2% could be achievable using the efficiency challenges from the price control models; and
- between –2.1% and 27.6% could be achievable using the efficiency challenges from the separate bad debt and non-bad debt models, weighted by Yorkshire's planned expenditure in each area.

Therefore, our combined total efficiency target for residential retail is consistent with upper quintile efficiency benchmark. We have shown this below in figure 7 and referenced the ranges and splits between catch-up and frontier in table 8A and B for the ranges developed based on the differing levels of model aggregation. We also provide a reference to the evidence used in developing the benchmark ranges.

An important feature of the Retail ranges is that the maximum efficiency challenges are often driven by a few "outlier" benchmarking models. This can be seen in tables 8A and 8B, which show that the central (average) efficiency challenge is below the halfway point between the minimum and maximum challenges (7.8% versus 10.0% in 8A, 11.5% versus 12.8% in 8B).

It is also apparent from the Economic Insight report, which shows that our catch-up to the upper quintile is 0% in 60% (18 out of 30) benchmarking models.[4] In fact, only 20% of the models (6 out of 30) suggest that Yorkshire has a catch-up challenge greater than 10%.

Finally, we note that Economic Insight's analysis of bad debt charges concluded that "*any attempt by Yorkshire to reduce its bad debt costs would represent an ambitious and stretching efficiency target…because its bad debt costs are: lower than all but one other water company; and lower than several companies in other sectors*".[5]

[4] Appendix 8b: Household retail efficiency benchmarking and triangulation, pages 55 and 56.

[5] Appendix 8e: Cross-sector benchmarking of bad debt, page 6.

Accordingly, the available evidence suggests that our bad debt performance is in line with companies from other sectors, however we have embedded further bad debt efficiency within our business plan for household retail in a desire to maintain our industry leading performance in this area.

Figure 7: Our household retail efficiency challenge

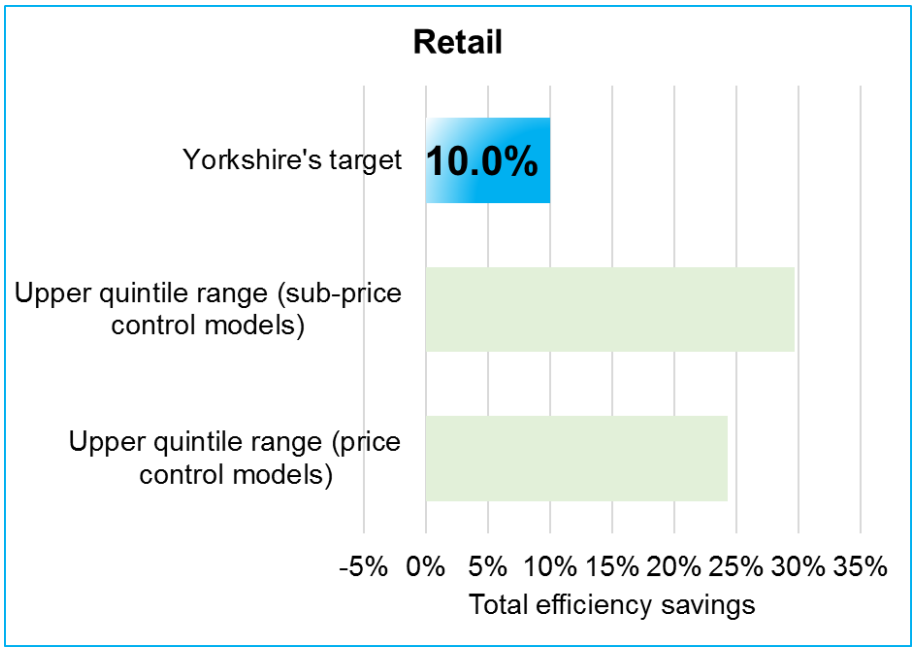


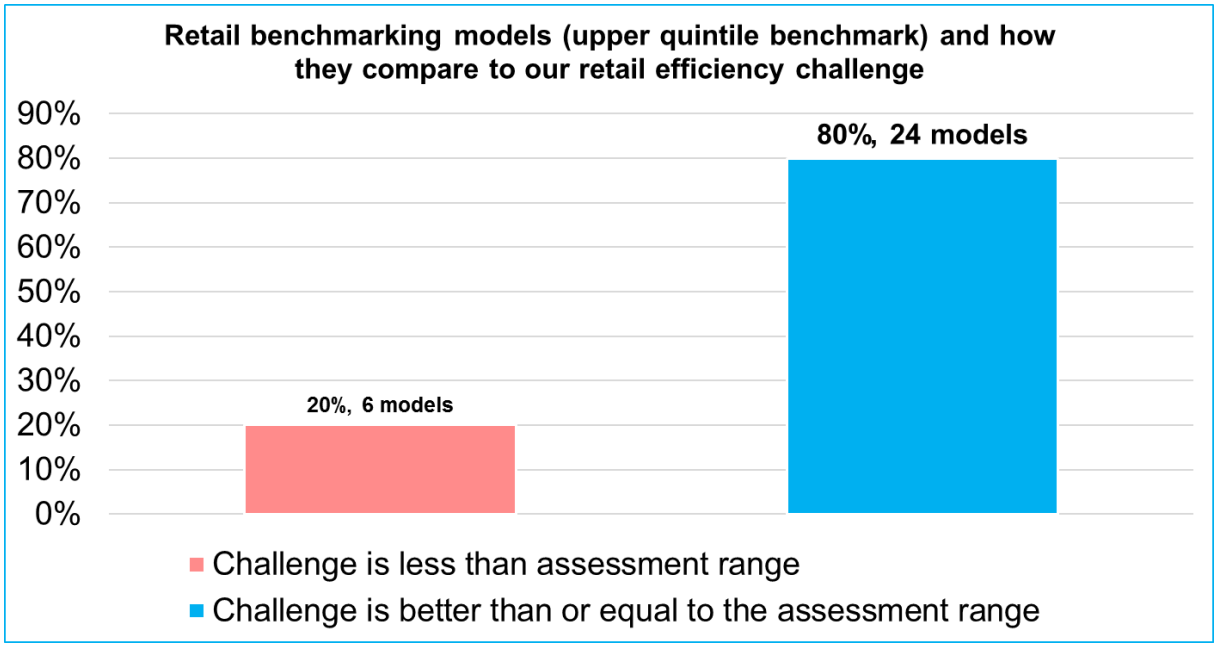
Table 8A: Retail Upper Quintile (UQ+) efficiency challenge – PRICE CONTROL MODELS

	Min	Max	Central	Source
Catch-up	0.0%	17.9%	5.8%	Household retail efficiency benchmarking and triangulation, page 55.
Frontier shift	-2.1%	5.3%	2.1%	The scope for frontier shift at PR19, pages 15-17.
Total	-2.1%	22.2%	7.8%	

Table 8B: Retail Upper Quintile (UQ+) efficiency challenge – SUB-PRICE CONTROL MODELS

	Min	Max	Central	Source
Catch-up	0.0%	23.6%	9.7%	Household retail efficiency benchmarking and triangulation, page 55.
Frontier shift	-2.1%	5.3%	2.1%	The scope for frontier shift at PR19, pages 15-17.
Total	-2.1%	27.6%	11.5%	

Figure 8: Number and percentage of models that our challenge is with the assessment range



9. Conclusion

The evidence set out in the section shows that our efficiency challenges are consistent, ambitious and realistic, when compared with the analysis and evidence we have commissioned as part of our PR19 plan development.

In the majority of cases our challenges exceed the upper quartile efficiency ranges implied by the benchmarking evidence and are consistent with a frontier efficiency assessment. This is further evidence that we have challenged our plan to be as efficient as possible building on our track record of efficient delivery and assessment of our plans in previous price control periods.

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