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Trust in water

Costs and benefits of introducing competition to residential customers in England – emerging findings

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About this document

In November 2015 the UK Government asked Ofwat to provide an assessment of the costs and benefits of extending retail competition to residential water customers. This document presents our initial thinking ahead of producing our final report to government in September 2016.

We have assessed the costs and benefits of introducing residential retail competition to the water and wastewater sectors in England against a counterfactual in which the status quo is retained and residential competition is not implemented. Our approach mirrors that taken by Professor Martin Cave in his 2009 analysis of the merits of enhancing competitive pressures in the UK water market.

In our assessment we have used data wherever possible to derive quantitative estimates of the scale of costs and benefits that would accrue as a result of the implementation of residential retail competition. Many costs and, in particular, benefits are difficult to quantify. Where we have not been able to use reliable data we have made a qualitative assessment.

As part of our assessment, we have modelled outcomes against four possible scenarios for the market. We have used these scenarios to estimate a range of possible costs and benefits of introducing residential retail competition and assessed whether the policy would have a net benefit or net cost.

Scenario	NPV
1. Low cost, widespread innovation, strong competitive activity among retailers	£2,327m
2. Low cost, less innovation and competitive activity among retailers	£1,215m
3. High costs, less innovation and competitive activity among retailers	£655m
4. High costs, little innovation and weaker competitive activity among retailers	-£639m

We explain our assumptions about the different drivers for costs and benefits in these scenarios and the outcomes they lead to for customers, retailers and wholesalers.

Details of how to respond to our initial findings can be found in Chapter 4. Any responses and additional evidence should be submitted by Friday 5 August.

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1. Introduction

1.1 What we have been asked to do

On 30 November 2015 the UK Government, in [A Better Deal: boosting competition to bring down bills for families and firms](#) outlined the action it is taking to introduce competition to the water sector in England. It outlined changes being made in the business retail market and in upstream water markets. It announced that:

Ofwat will provide an assessment by summer 2016 of the costs and benefits of extending retail competition to household water customers. Following this, the government will work with water companies to begin the transition to retail competition before the end of this Parliament.

The rationale for the potential introduction of competition for residential customers in the water sector in England sits within a broader vision which the Government expressed as:

Opening up markets to new entrants promotes stronger competition and drives efficiency and innovation. The result is the creation of new and innovative products and services at lower costs, which benefits consumers across the UK... The government is taking action to open up markets to new entrants, driving greater competition and providing consumers with more choice.

In this document we set out our initial thinking on the costs and benefits of extending retail competition to residential customers. We want to work with stakeholders to ensure that we provide a robust evidence base to help Government reach an informed decision.

1.2 Our approach

In response to “A Better Deal”, in January 2016 we invited views on a [draft terms of reference](#) for the review, and issued a [call for evidence](#). Together, our terms of reference and our call for evidence provided stakeholders with information about the way Ofwat intended to progress the review and enabled us to engage with stakeholders early in the process. In response, a broad range of stakeholders set out views on key areas of focus for our assessment and provided a significant volume of supporting evidence.

As set out in our terms of reference, we committed to consider the following areas:

- The overall potential costs and benefits that may be incurred as a result of any potential implementation of a set of defined competition models using a range of defined scenarios of how the future market for residential retail competition in England could evolve;
- Specific issues that could affect the feasibility of implementing certain competition models; and
- Different scenarios of the way that the water sector in England may evolve.

We also outlined three key principles to guide our assessment:

- That the decision on whether, in what form and on what timeline the residential retail market in England will be opened to competition is a matter for UK Government;
- Our assessment of the costs and benefits of extending retail competition to residential customers will be evidence based; and
- We will follow an open and transparent process, seeking evidence and ideas from those in the sector and beyond.

We will submit our assessment in September 2016 to enable the UK Government to take a decision about whether retail competition should be extended to residential customers.

1.3 How we are setting out our emerging findings

The assessment set out in this document is supported by evidence and analysis which we are publishing alongside in supporting documents.

1.3.1 Emerging findings

Our emerging findings (this document) sets out our initial thinking on our assessment of costs and benefits. In Chapter 2 we outline the areas where we have qualitatively assessed the costs and benefits of introducing residential retail competition. We invite evidence from stakeholders that would enable us, where possible, to quantify areas. In Chapter 3 we set out how we have assessed the quantifiable costs and benefits of introducing residential retail competition. We outline the assumptions that underpin our assessment, set out the sources of information that we have used to quantify those assumptions, and explore how different scenarios may impact on the quantifiable costs and benefits. We also set out how our assessment has been made

against a counterfactual of “business as usual” where competition is not introduced in the residential part of the market, but where we factor in the opening of the business customer market to competition in April 2017. Our counterfactual is also underpinned by certain assumptions and we outline these. We welcome feedback from stakeholders on how we have undertaken our assessment and particularly welcome additional information and evidence to support our assessment.

Treatment of selected issues in this analysis

Certain issues have potential to influence the outcomes estimated in this quantitative modelling. In considering how we account for these issues in our quantitative modelling, we note that our role is to produce a report for the UK Government on the costs and benefits of extending retail competition in England to residential customers and not to comment on UK Government policy. We have assessed a wide range of relevant evidence, much of which has been provided by stakeholders, and this has informed our initial findings. In line with our terms of reference, in cases where we identify and discuss specific policy issues or make policy assumptions, we do so only for the purposes of illustrating our competition assessment, in order that our final assessment can best inform UK Government. Our analysis assumes no changes to current UK Government policy. We have not been asked by the UK Government to assess any specific policy changes and our analysis should not be taken as proposing any changes to UK Government policy.

In particular, this analysis assumes the following:

- **disconnection** – the prohibition on water retailers disconnecting residential customers remains in force;
- **metering** - current metering policies continue; that meters for residential premises are not mandatory and that provisions enabling customers to request to have a meter installed at their premises remain in force;
- **retail exits and separation** – some form of retail market exit and separation is allowed for (and indeed separation is assumed to occur). The precise framework for such exit and separation to occur would be subject to future policy decisions; and
- **social tariffs** – some form of social protection would be in place for customers in vulnerable circumstances, although we have not taken any view on whether this protection would take the form of existing support schemes or some other form.

1.3.2 Report on stakeholder views and issues

Alongside this document, we are publishing an additional document which sets out:

- A range of issues that stakeholders raised with us in response to our call for evidence and other channels. We assess whether any of the issues might impact on the introduction of retail competition in the residential sector;
- Our process for engaging with stakeholders during this review; and
- A summary of the evidence submitted to us by stakeholders.

All formal responses to our [draft terms of reference](#) and [call for evidence](#) are also published in full alongside this document.

1.3.3 Technical appendix on competition models

As part of our terms of reference we undertook to:

review the possible options for introducing competition; ranging from competition for the market to competition in the market... competitive retail market scenarios could be expected to include: a “thin” retail market: where the scope of activities is limited to providing core retail services, such as billing and payment handling; a “thick” retail market: where the scope of activities that retailers could undertake is broader; a “narrow” market: where a specific sub-set or sub-sets of residential customers are contestable; and a “wide” market: where all residential customers are contestable.

We have looked at a variety of competition models, and tested these with customers through our customer research (see below), and with a broad range of stakeholders. The consistent feedback we have received is that there is a preference for a classic model of competition (“in the market”), that is open to as wide a range of customers as possible and that focuses narrowly on core retail services. This is consistent with the aims set out by the UK Government in A Better Deal, which referenced providing consumers with more choice and benefitting consumers widely.

The assumptions in our assessment are therefore consistent with a competition model that incorporates all customers and focuses on core retail services model that incorporates all customers and focuses on core retail services. However, we note that if the UK Government decides to proceed with the introduction of competition into the residential retail market it may choose a different approach.

In our technical appendix on competition models we set out our analysis of the possible range of competition models as we described in our terms of reference.

1.3.4 Customer research

It is essential that our assessment is informed by the views of water customers and so an important strand of our work has been to engage with customers to understand what they think about competition in the residential retail market. We have worked with market research firm Accent to understand whether customers would be interested in competition, what they would see as the advantage and disadvantages if it were introduced, what they would look for from a competitive market, and how likely they would be to engage in a competitive market. [Accent's report is published alongside this document.](#)

We have also considered research commissioned from Systra by the Consumer Council for Water ([Floating the idea: Household customer views on water market reform in England](#)) that explores customers' expectations of savings in a competitive market. We have worked with the Consumer Council for Water to ensure that the two sets of consumer research did not overlap.

1.3.5 Learning from the energy market

In our terms of reference we set out that an important part of our assessment would be to consider evidence from other utility sectors where residential retail competition has been introduced. As residential customers do not have a choice over their water and wastewater service retailer, we see value in considering experiences in other sectors to inform our assessment of how competition might be taken forward.

A large number of respondents to the consultation on our terms of reference strongly agreed that our assessment would be enhanced by considering evidence from other utility sectors. A number of respondents submitted helpful reports which have informed our initial findings. These submissions are summarised in our stakeholder views and issues document and published in full on our website alongside this document.

We have paid particular regard to experiences in the energy market. Both stakeholders and customers (through our customer research) have suggested that the energy market provides the closest parallel to a future residential retail market. We agree that there are strong parallels. However, we are also mindful of some key differences, such as competitive upstream wholesale markets in electricity and gas

and link to volatile global commodity markets, which have frequent and significant effects on energy retail prices. In energy the price of electricity and gas at the wholesale level accounts for around 43% of the average dual fuel bill, whereas in water the price of water resources accounts for only around 10% of the average bill. In addition the 90% of the average bill that is accounted for in water by water resources, and other network activities, will remain regulated by Ofwat; this compares to the 24% of the average dual fuel energy bill which is accounted for by network activities regulated by Ofgem.¹

Since the last major review of the potential for competition in water (the review led by Professor Martin Cave in 2009), there have been some significant changes in retail energy markets. Ofgem has introduced some significant reforms in the retail energy market and it also subsequently referred the market to the Competition and Markets Authority (CMA). The CMA has now published its findings and remedies.

We think that it is important to understand the lessons from the CMA enquiry into energy and ensure we take account of these in our assumptions in our assessment of the costs and benefits of introducing competition in water. We are aware that there has been debate around the CMA energy enquiry, and we want to understand the views that various stakeholders have advanced.

We commissioned KPMG to produce a [report on lessons which could be learned from the experience of competition in gas and electricity markets in Great Britain](#). KPMG's report, which is also published alongside our assessment, considers lessons from the opening of the gas and electricity markets, as well as from subsequent reviews into the market undertaken by sector regulator Ofgem and the CMA.

The report draws out 18 key lessons for the water sector to consider, which cover the case for introducing competition, the way in which competition might be introduced, and factors to consider once a market is established.

¹ Breakdown of average dual fuel energy bill can be found at [Ofgem data portal](#).

2. Qualitative analysis

In our assessment in the next chapter we describe how we have quantified the costs and benefits of competition against a counterfactual of competition not being introduced. However, as we noted in our terms of reference, quantifying the benefits (especially dynamic benefits) of competition is difficult. We cited the example of innovation, which can bring many non-monetary benefits to consumers (such as convenience, or peace of mind).

In this chapter we qualitatively assess some of the costs and benefits of competition.² In this we consider the findings of our customer research undertaken by Accent which is published alongside this document. This research confirmed that factors besides monetary savings are important to customers. While this research has given us a strong steer around customer preferences, the customers participating in the research were not asked to place a financial value on benefits such as choice and innovation as we do not consider that these can be meaningfully quantified. As a result, our assessment of a number of the other factors which are important to customers remains largely qualitative at this stage.

Nevertheless, as we consider that customer preferences should be a central part of the consideration of the costs and benefits of competition, we would welcome views on whether it is possible to find a rigorous way of quantifying these costs and benefits. If, on the other hand, the assessment does remain qualitative we would welcome views on the level of emphasis we should place on the qualitative costs and benefits relative to the quantitative assessment in our final report to government.

2.1 Qualitative assessment of customer experiences

As part of our customer research customers were asked to identify a range of potential benefits and costs of competition. In terms of financial impacts, expected savings from lower bills was seen as the most significant benefit. At the same time, it was also recognised that in a competitive market customers could incur some 'transaction costs' in terms of the time spent searching for and arranging new deals. In our assessment of costs and benefits, we have sought to quantify these financial impacts on an aggregate basis.

² Note also that some of the scenarios that we set out in Chapter 3 are informed by qualitative assessment. We also qualitatively assess a number of issues raised by stakeholders in our stakeholder views and issues document, which is published alongside this document.

In addition to the financial impacts, however, customers also identified a number of other, more qualitative, costs and benefits which might arise from competition. Our research highlighted, for example, the importance that many consumers place on being able to exercise choice (with 56% of customers indicating that choice of retailer in a water market would be a good idea). As well as a general belief in the principle of choice and an expectation that competition would help to deliver keener prices, customers also identified other potential benefits from competition in terms of improved customer service and greater convenience from combined billing.³

Customers also agreed that choice could bring benefits in terms of new products and services. This would seem to suggest that the ability to exercise choice would be a benefit of competition that has a value for consumers that is in part financial and in part less quantifiable.

In terms of costs, in addition to the time-cost of engagement (which we have quantified), the main issues that our research drew-out were a reluctance among some customers to engage with the market, linked to a scepticism about whether it would be worth the time and effort. We consider that this represents a reluctance to exercise choice rather than an additional non-quantifiable cost.

There is mixed qualitative evidence from other sectors about how some of the benefits identified by customers may be realised in practice. We have considered evidence from regular surveys from the Institute of Customer Service (ICS) on levels of satisfaction with suppliers of goods and services.⁴ These show that competitive utility providers (such as energy suppliers) tend to perform at similar levels to water suppliers. However, there is a reasonably wide spread in satisfaction levels between different energy suppliers. New entrants to the market tend to out-perform former incumbents, which would imply that there are benefits for switchers in terms of improved customer service. We are also aware from the energy sector that the quality of the switching process, and in particular the extent to which it is hassle-free and risk-free, is a big determinant of satisfaction levels.⁵ A poor quality switching experience, which involved hassle and risk, would be an additional cost of competition (albeit one that should be addressed through the market design prior to

³ This could include both combined water/wastewater billing for customers in areas where customers are currently billed separately for these services, and combined water services and energy billing across all customers.

⁴ UKCSI reports are available to purchase from ICS. [A summary of the findings](#) of the most recent report is available on the ICS website.

⁵ Citizen's Advice [Supplier Performance League Table](#) ranks suppliers by complaints and weights different complaints by levels of seriousness. This shows a more mixed picture than that from UKCSI, with no clear pattern between incumbents and new entrants and some significant movement in rankings each quarter. [Data from Ofgem](#) shows that in the first quarter of 2016 six out of eight new entrants had unweighted complaint levels significantly below the average of the so called "Big 6" (former incumbents). All eight new entrants had unweighted complaint levels at about half the Big 6 average in the first quarter of 2016.

market opening). Satisfaction surveys however do not quantify the value that customers place on the level of service that they receive. We would welcome views from stakeholders on whether there is evidence that does place a value on the level of customer service that customers receive and if it would be possible to reflect this within our quantitative assessment.

Evidence on the benefits of combined billing of services is much stronger. Ofgem has stated that “the majority” of customers that are eligible to do so take combined gas and electricity deals.⁶ According to [Ofcom](#) in the telecoms sector, 68% of UK households have some form of bundled service (the majority having combined landline and broadband, with around half of these also including television within the bundle). The evidence is therefore reasonably strong that accessing combined services is valued by customers across a variety of competitive sectors, although it is less clear whether their motivations were financial (in terms of offers available), convenience or a combination of both. We are not aware of any evidence that quantifies the value customers receive from taking combined services. We would welcome any evidence from stakeholders which we could incorporate into our quantitative assessment.

There are areas where there is less evidence available for us to make a qualitative assessment and we would welcome thoughts from stakeholders. For example, we can envisage that, as customers in our research suggest, competition could lead to the emergence of new and innovative products and services. This could cover many areas, including, for example, the range of payment methods available for customers. Evidence from the opening of the energy market (where there was a significant uptake of direct debit following market opening) may not be a reliable guide, since innovation in payment methods has expanded significantly since the energy market opened.⁷ However, we do note that Ofgem retained licence obligations on suppliers to provide a range of payment methods for customers. We also note that some water companies have recently committed to continuing to offer paper billing. And we further note that by moving customers onto direct debit, and thereby removing the customer contact that paying a bill creates, this could reduce an opportunity for retailers to influence customer behaviour.

New products and services might also change customers’ water usage. We note the impact of new technologies in banking and energy which are driving different customer behaviours.⁸ It is possible to envisage an equivalent kind of impact in

⁶ See [State of the Market Report](#) 2014, paragraph 2.10. Note that around 20% of electricity customers do not have access to mains gas.

⁷ For example smart payments such as [Paym](#).

⁸ Examples in energy include new ways of engaging with the market (see for example [Flipper](#)), and of in-home energy management (for example [Nest](#) or [Hive](#)). The BBA reported on the influence of new technologies in the major shift in customer engagement in banking in [a report in June 2015](#).

water, but we do not have evidence to allow us to estimate the scale of that impact, nor the value it may have. Innovative technology that led to more efficient use of water may bring value to the customer (through lower bills and improved resilience), the retailer (through customer acquisition), the wholesaler (through avoided investment), other customers (through downward pressure on wholesale charges), and the environment (through reductions in abstraction).). Similarly, innovative technology, such as waste water metering, that led to more efficient management of waste water, for example through reductions in surface water run-off, may also bring value to customers (directly and more widely), wholesalers, and the environment. All such benefits should be quantifiable, but we do not currently have sufficiently reliable information to do so. We would welcome any evidence from stakeholders which we could incorporate into our quantitative assessment.

2.2 Questions from this chapter

We welcome respondents' views on our assessment of qualitative factors. This includes ways in which we might quantify factors we have currently assessed qualitatively and how we have conducted our qualitative assessment. We also welcome any evidence from stakeholders which we could incorporate into our assessment.

3. Quantative analysis

In this chapter we describe how we have estimated the costs and benefits of competition against a counterfactual, in which residential retail competition is not introduced. The aim of these initial findings is to provide improved information to stakeholders and to government on the costs and benefits of potential residential retail competition.

This section presents our approach to the analysis and our initial findings. These findings do not represent a recommendation, nor do quantitative results represent the full range of considerations that should inform that decision. Quantitative results should be considered in conjunction with the qualitative assessment set out in the previous chapter. And any decision would also need to take account of the policy issues to which we have drawn attention.

3.1 An overview of the approach

This analysis seeks to explore the potential costs and benefits of residential retail competition in water and sewerage through a range of scenarios. Estimates associated with each scenario illustrate the scale of potential net cost or benefit that could be realised dynamically over time under a range of conditions. This analysis does not seek to model the competitive process, or customer behaviour, or company behaviour. It therefore does not seek to identify which market rules and policies would lead to the most effective outcomes. With so many aspects of market design and policy unknown at this stage, doing such analysis would add unnecessary complexity without providing real added value.

This initial assessment aims to illustrate the scale of benefits that could be realised. In practice, unlocking these benefits would require policy and market design to create the right conditions for competition to work effectively and in customers' interests.

This quantitative analysis has used the best information available within the timescale and scope of this work. Many of the current assumptions behind the four scenarios are based on limited information about the potential costs and benefits of residential retail competition.

This quantitative analysis is based on the following key steps.

- Step 1: **constructing a ‘counterfactual’**, estimating how the water value chain would develop absent competition but taking account of the opening of the business market to competition in April 2017, given what is known now;
- Step 2: where possible, quantitatively **estimating the potential costs and benefits** of residential retail competition, including their scale;
- Step 3: **estimating the potential implementation and ongoing incremental costs** associated with setting up, operating and monitoring residential retail competition; and
- Step 4: **comparing potential costs and benefits to illustrate their scale** and potential drivers.

The analysis takes a market-wide approach, in which individual company data on the current value chain (costs) is taken from PR14 and aggregated. All assumptions on which the modelling is based are also made at an aggregate (market-wide) level. This is because the analysis seeks to identify the envelope of potential costs and benefits across the sector, rather than for individual companies or customer groups.

This approach follows similar analysis carried out with respect to retail competition in water and wastewater (the Cave Review and the Impact Assessment of business retail competition in water). It aims to clearly and transparently provide estimates of the costs and benefits of residential retail competition and to provide stakeholders with a basis for submitting further evidence.

Our analysis estimates aggregate effects across the market, which are presented as present values, incorporating costs when they are incurred. These present values should not be confused with bill impacts. In practice, any retailer, competitive or otherwise, spreads costs over time, rather than simply passing these costs to customers as they are incurred. In contrast, some individual customers could be expected to make savings as soon as the market opens. New entrants could offer customers lower bills immediately through different business models or strategies. Incumbent retailers may also improve their price or service offering in response to competitive pressure.

3.1.1 Quantified costs

We have estimated the following types of costs quantitatively. Further detail of these cost estimates is included in the annex to this report:

- **costs to companies** associated with interacting with the market and the potential elective costs of separating their retail businesses and some costs of acquiring customers;

- **market operator costs**, resulting from implementing appropriate systems to operate the market (e.g. to register customers and to facilitate the switching process and settlement between wholesalers and retailers);
- **costs to the regulator** (Ofwat) that would be incurred in designing and implementing competition, including establishing appropriate operational rules and arrangements and targeted customer protections;
- **costs to the government** associated with additional work necessary to introduce of residential retail competition; and
- **costs to customers** associated with time spent engaging in the market (on top of time they already spend managing their account).

Our quantitative analysis currently only includes potential costs and benefits to residential customers and to the water and wastewater sector. This includes all costs of setting up and running competition, including any costs incurred directly by the market operator, the regulator and government. However, we have not included costs and benefits beyond residential water customers and the water and wastewater sector (i.e. costs and benefits to other sectors and to the economy as a whole, such as impacts on employment or economic growth)⁹.

3.1.2 Quantified benefits

We have quantified the following potential benefits of residential retail competition in this analysis. Further detail on each of these areas, including the rationale on which savings are based, is outlined in the annex below. As outlined above, not all scenarios lead to benefits in all categories.

Efficiencies in retail activities. The introduction of competition leads to the prospect of new entry, as well as price and quality competition with other retailers, facilitated by customer choice. As a result, the competitive process would deliver innovations and improved operations, leading retailers to deliver the same activities more efficiently (at lower cost). This results in a one-off and ongoing efficiency savings to activities carried out by retailers. Suppliers will also realise efficiencies in serving customers who are not switching or actively engaging in the market, by applying the same practices and learning to serving all customers. In Scotland, the introduction of retail competition in non-household supply has led to large benefits over time. In January 2012 Business Stream reported that since the April 2008

⁹ This analysis also only includes direct costs and benefits, not indirect nor induced costs and benefits.

introduction of non-household retail competition in Scotland it had lowered costs by 18%.¹⁰

We used assumptions on efficiency savings across retailers' activities based on established estimates of savings from the introduction of competition. We have adjusted these savings to avoid double-counting possible spill-over efficiency benefits that will be realised through the introduction of business retail competition.

Bad debt: retailers operating in a competitive environment would have greater incentive and ability to reduce bad debt costs, particularly given that bad debt costs account for 44% of total retail costs. £2.2bn of residential water revenue was outstanding in 2014¹¹, compared with around £475m in gas and £480m in electricity, despite average bills generally being two to three times higher than water across both fuels. In particular, competitive retailers would be likely to obtain better information about the identity of their customers and as a consequence, they would be in a better position to secure payment and therefore lower bad debt costs. Innovative retailers may also develop new ways to lower bad debt costs. Multi-utility entry may also provide greater scope for bad debt reduction, through cross-utility methods for managing customer debt.

We have based our estimates of bad debt savings on comparisons with levels of bad debt in other sectors and plausible reductions in overall retail costs.

Metering costs: competitive retailers may find new innovative ways to lower metering costs, particularly if it becomes commercially viable to roll out new metering solutions. These could include smart metering or other technology alongside existing meters, with more innovative tariffs and water efficiency products.

Wholesale cost savings: competitive retailers operating separately from wholesale businesses would likely put increased pressure on wholesalers to lower their costs. In some cases retailers may be able to procure their wholesale water resources from third parties. Independent retailers would have significant incentive to scrutinise wholesale costs, because wholesale costs comprise roughly 92% of residential water bills¹², so small efficiency savings can lead to significant overall savings.

Competitive retailers would likely challenge wholesaler suppliers on their costs and level of service. National retailers will be able to compare service and charges from

¹⁰ Business Stream (2012), [Written Evidence submitted by Business Stream to the Environment, Food and Rural Affairs Committee](#)

¹¹ Ofwat (December 2016c), [Affordability and Debt 2014-15](#)

¹² Based on PR14 allowed revenue for 2015/16,

regional wholesale service provides which gives them a strong basis to challenge the wholesale service providers.

Competitive retailers would have the incentive and means to help customers save money by reducing demand for wholesale water services. Reducing customer demand will have significant impact on metered customer bills, so it makes commercial sense for retailers to help customers save water. Retailers would also have the incentive to encourage customers to take up meters for water services, and apply new technology such as smart metering and metering of wastewater services. Retailers may also have the incentive to encourage customers to manage waste water more efficiently, especially if they were to meter waste water and were able to secure lower wholesale charges as a result. As well as improving resilience, over the longer term this could help to avoid the need for wholesalers and others to provide costly additional drainage and flood defence.

Retailers would be able to procure competitive wholesale services such as water resources and treatment from alternative suppliers, where this results in savings or better service to customers. Customers will be served by separate retailer and wholesaler service providers, as is the case with the business retail market from April 2017.

The Water Act 2014 provides for reform of wholesale markets. The reform of wholesale markets is under development. We set out our policy framework in May 2016, with links to wider UK Government policy on bringing relevant parts of the Water Act 2014 into force, and water licence abstraction reform, and links to the Welsh Government's Wales Water Strategy. Some parts of wholesale services, such as water distribution and waste water collection, display characteristics that make them persistently monopolistic and making these services contestable is less likely to deliver benefits (although we do see scope for benefits from market testing specific projects).

Our May Water 2020 document identified savings of around £800 million from wholesale water trading. The major savings come from avoiding the need to develop expensive new water resources. The extension of retail competition from business customers to residential customers would expand the proportion of the downstream market open to competition from around 30% to 100%. This would significantly increase scope for retailers to procure water resources from third parties rather than rely on incumbent wholesalers. Water resources are likely to remain localised and therefore significant market share at retail level in relevant area is likely to be important to the development of the market.

We have made assumptions of wholesale cost savings with reference to our previous analysis on similar savings from the introduction of business retail competition.

Water efficiency savings: Retailers may offer products specifically targeted at customers that value a water efficiency offering. Others may innovate to help customers save water to reduce their bills, for example by reducing leaks within customers' premises. Multi-utility entry may also give retailers an opportunity to leverage practices, technology or learning from other sectors to help customers save money on their bills. They may also take advantage of savings from carrying out similar activities across different utilities. Retailers could offer such services and savings on both water and wastewater volumes.

Experience in Scotland with the competitive market has shown that retailers serving business customers compete by offering bill savings. Savings can come through water efficiency, wastewater re-use, reducing surface water drainage to sewers and pre-treatment for trade effluent customers. Our customer research for this review suggested that 50% of residential customers would be interested in switching suppliers in a water retail market, primarily to seek lower prices. However, 45% would be likely to switch in a market even without lower prices if a retailer were to offer new services such as water efficiency and leak monitoring.

The residential retail market is characterised by a large number of low volume users, by comparison, the business retail market has a smaller number of users with some high volume users. This means that the water and wastewater efficiency model used in the business market may not be directly applicable to the retail residential market. However, the commercial driver for water efficiency remains strong. Wholesale bills are based on volumetric charging, so reducing consumption has potential to reduce retailers' wholesale charges significantly and enable them to offer significant savings on bills.

Residential retail competition may therefore help to deliver more new services. For example, use of technology to influence customer behaviour, targeting of particular customers such as high-volume users to tailor service offerings, and/or new approaches to wastewater metering and wider use of Sustainable Urban Draining Systems to help reduce residential wastewater discharge. A significant share of water and energy efficiency in the home are linked, so multi-utility market could provide resilience and customer benefits for both sectors. Water and wastewater efficiency might be more significant than energy efficiency in the residential energy market because the customer is responsible for resolving supply pipe leakage on their property. Emerging smart technology for more proactive leakage monitoring in

the home could be a feature of a residential retail market that could support water efficiency.

Monopoly providers have had some success in reducing demand. Large providers in the South East of England have reduced consumption by around 10% over the last 15 years, despite rising population, and consumption per capital in England has reduced by around 8% in the same period¹³. However, the highest per capita residential consumption is currently 40% higher than the lowest (comparing company averages). This suggests significant scope for further improvements in water efficiency. Along with developments in technology and understanding of how to communicate and influence customer behavior, this suggests that competitive retailing has considerable scope to reduce demand.

We have made assumptions on potential water efficiency savings with reference to studies that have estimated potential water savings that households can make using currently-available devices. On this basis, savings of 20% of water demand appear plausible over thirty years. This is a conservative assumption, given the likely technological developments to emerge in that time. This reflects the increase in incentives to offer residential customers water efficiency products or services. Because retailers would invest in these measures where there is a commercial case only, costs have not been included here. However we recognise this may be an area of debate. Water efficiency savings have only been applied to active, metered customers in this analysis.

We have estimated the value of water efficiency savings with reference to a long-run marginal cost of water, which the government used in its previous analysis of the impact of business retail competition. This estimate has drawbacks, but is the most recent estimate specifically applicable to England and Wales. The true value of water over the time period of this analysis is challenging to estimate, particularly given the lumpy and uncertain nature of the future need for additional water resources. A comparison with our Water 2020 work illustrates that the value of water efficiency savings in the highest-saving scenario in this analysis is commensurate with estimated savings from the introduction of wholesale market reform.

The benefits of water efficiency go beyond the value of water. It also includes the value of resilience and of environmental benefits associated with lower water demand. We recognise the value of resilience and will consult on how companies can demonstrate their contribution to resilience as part of the PR19 process. Doing so presents challenges and this analysis does not seek to quantify the value of potential resilience improvement from residential retail competition, nor the potential

¹³ Ofwat calculations based on EA annual returns submitted by companies.

environmental benefits. Nonetheless, these are important benefits that should be considered in any decision on whether to introduce residential retail competition.

Retailers may also have greater incentives to meter wastewater, which could allow them to negotiate cost-reflective prices with wholesalers. This could in particular improve the resilience of the wastewater system to extreme events and/or flooding. However, these initial findings do not attempt to quantify the value of that benefit, and we would welcome views on how this could be done.

3.2 Results – quantitative estimates of costs and benefits

This section describes the four scenarios that have been used in this analysis, then presents results from estimations made for each scenario.

3.2.1 Scenarios

This section describes the scenarios that are explored in this analysis. It sets out the assumptions that support each scenario at a high level and explains what would need to be believed about a competitive residential retail market to support the scenario.

Scenario 1 – low cost, widespread innovation and strong competitive activity

Scenario 1 estimates the potential costs and benefits in a market with widespread innovation and a high level of competitive activity among retailers, where costs are generally lower than for business market opening¹⁴. Under this scenario, the market could be characterised by the conditions set out below.

- Implementation costs (setting up and running the market). The market architecture for the business customer market in England is easily scalable to the residential retail market (e.g. switching and settlement systems, codes) and this

¹⁴ Where most costs are lower in absolute terms, but company costs are lower in relative (per customer) terms, recognising that residential market opening would apply to a much larger number of customers. This distinction applies throughout these scenario descriptions.

means that implementation costs for companies, market operator and regulator are only somewhat higher¹⁵ than estimated for business market opening¹⁶.

- Costs of operating in the market for companies. Companies can scale changes to their billing and account systems, which they have already implemented for the business customer market in England, to the residential market. If retailers offer multi-utility products, they may be able to extend retail operations to water without incurring substantial additional costs.
- Strong competitive rivalry between retailers may result from a significant threat of entry or real entry from new retailers. For example, existing (monopoly) water retailers entering the market in others' incumbent areas, business market retailers entering the residential market, or other utility retailers entering the water market, such as energy retailers. We have firm but commercially sensitive evidence that non-water retailers are actively considering entering the market, making this a realistic possibility. We also encourage others considering entry to contact us.
- Through competitive rivalry, retailers find significant cost-saving efficiencies. This could happen through multi-utility retailing, enabling retailers to spread fixed costs of serving customers across greater revenues.
- Retailers are incentivised to improve the management of bad debt, to reduce bad debt costs, which currently comprise around 44% of total retail costs (and reduce to 21% in this scenario).¹⁷ Bad debt costs could be reduced to a level that is commensurate with bad-debt costs in other sectors. Retailers improve data management capabilities as a result of competition, enabling them to better target bad debt and help customers find ways to pay their bills. The systems and switching processes associated with competition means that retailers have good information on identity of their customers and therefore better able to recover revenues.
- Competitive rivalry results in price and service-based competition, leading to opportunities for customers to lower their bills by reducing their consumption. New entrants or current incumbent retailers offer innovative products and services. These could include multi-utility bundles or services that offer bill savings through greater efficiency (just in water, or across utilities, for example by lowering hot water usage or storage). They could also include wastewater meters and services to reduce the impact of residential wastewater on the drainage network, reducing cost and improving resilience.
- Retailers could make significant savings on wholesale costs through being able to challenge those costs and compare charges across different wholesalers.

¹⁵ Actual costs for business market opening were estimated based on evidence that is not as strong as we would wish for. In this scenario residential market set-up costs are assumed to be roughly twice that estimate for the business market, with similar ongoing costs.

¹⁶ Evidence on company estimates of the cost of business market opening was received after close of business on 11 July. These will be taken into account when we publish our final findings.

¹⁷Albeit this is 21% of a lower total retail cost.

- Retailers seek to reduce their wholesale costs, for example by reducing demand for water resources or peak load drainage capacity.
- New technology is developed and/or promoted by retailers. New technology or better use of existing technology could enable improved water efficiency or give customers incentives to reduce their impact on drainage networks by managing surface water run-off. Ultimately this could create a world of 'distributed infrastructure' with more customer-side activity providing water resources and smarter waste water management.
- Customers find these benefits attractive and this stimulates engagement in the market. It is coupled with new technologies that make it possible for third parties to offer search and switching services for customers. This is happening now in energy, for example with the introduction of a service that offers to switch customers to a tariff that matches their pre-stated preferences. This increases the proportion of customers actively engaged with the market, so that more of the benefits of competition are enjoyed by more customers. Consequently, for retailers the cost of acquiring a customer is low.

Scenario 2 – low cost, some innovation and good competitive activity

Scenario 2 estimates the potential costs and benefits in a market with lower costs, but with less innovation and competitive rivalry among retailers. Under this scenario, the market could be characterised by the conditions set out below.

- Implementation costs (setting up and running the market) are only somewhat higher than for the business retail market, as in Scenario 1.
- There is less competitive rivalry among retailers than in Scenario 1, but this rivalry is still significant and consistent with rivalry seen today in other competitive retail utility markets. This rivalry leads to some competitive pressure from potential entrants, or entry into the market. Retailers find less scope for reducing retail costs, but still lower costs significantly. Multi-utility retailers may enter the market, helping to put this downward pressure on costs.
- Unlike scenario 1, technology currently being developed in other sectors is not adopted in water, for example services that switch customers' retailer for them on the basis of a customer's pre-specified preferences. Limited adoption of technology such as water and waste water metering and apps means the service offer available to customers is less attractive than in scenario 1, and is as in scenario 2. As a result, there is more limited customer engagement in the market. Therefore customer engagement and the resulting competitive activity does not undergo any significant change in the next thirty years. Consequently the cost of acquiring a customer for a retailer is higher than in scenario 1. No more than a

third of the market participates actively in the market after thirty years. Multi-utility entry may deliver further retail savings, but not to the same degree as scenario 1.

Scenario 3 – high costs, less innovation and good competitive activity

Scenario 3 estimates potential costs and benefits in a market with similar levels of competitive activity to scenario 2, but where implementation costs are higher for the residential market than for business market opening (for set-up costs and for running costs). Under this scenario, the market could be characterised by the conditions set out below.

- Implementation costs are higher for companies, market operator and regulator than in scenarios 1 and 2. This may happen if the market architecture (e.g. switching and settlement systems, codes) for the business retail market in England are not scalable for the residential retail market and entail much greater complexity.
- Costs of operating in the market for existing and new retailers are higher than in 1 and 2. This may arise if existing water retailers have to invest in new systems to enable them to compete, rather than building on systems implemented for business market opening, and/or if entrants from other sectors such as energy need to incur significant costs in adapting their systems to the water market.
- Competitive rivalry and activity among retailers is at the same level as in scenario 2, so the same potential drivers identified above for scenario 2 also apply here to scenario 3.

Scenario 4 – high costs, little innovation and weak competitive activity

Scenario 4 estimates potential costs and benefits in a market with even less competitive rivalry than in scenarios 3 and 4. As with scenario 3, implementation costs are higher for the residential market than for the business retail market opening (for set-up costs and for running costs). Under this scenario, the market could be characterised by the conditions set out below.

- Implementation costs are higher for companies, market operator and regulator, than in scenarios 1 and 2 but as in scenario 3. As with scenario 3, this may occur if the market architecture (e.g. switching and settlement systems, codes) for the business retail market in England are not scalable and entail much greater complexity.
- Costs of operating in the market for retailers are even higher than scenario 3. This may arise if existing water retailers have to invest in new systems to enable

them to compete, and if entrants from other sectors such as energy need to incur significant costs in adapting their systems to the water market.

- There is limited competitive rivalry in the market, little threat of entry and retailers do not compete vigorously between each other. This may occur if costs of operating in the market act as a deterrent to entry or if a lack of customer engagement means that costs of entry are high and the cost of acquiring a customer for any retailer is higher than in scenarios 1 to 3.
- This lack of vigorous competition means retailers do not offer innovative products and services. Water efficiency and waste water management are not promoted. Bad debt costs are not reduced.
- As a result of this and onerous search and switching costs customers do not engage with the market, with slow development of the active share of customers to 15% of the market in 25 years' time. This compounds the ineffectiveness of competition and consequently the costs of implementing and running competition outweigh the benefits.

The scenarios described above are summarised in the table below (Table 1). Detailed assumptions for each parameter can be found below in Annex 1.

Table 1 Summary of scenario assumptions

Area	Scenario 1 – low cost, widespread innovation, strong competitive activity	Scenario 2 – low cost, less innovation, good competitive activity	Scenario 3 – high cost, less innovation, good competitive activity	Scenario 4 – high cost, little innovation, weak competitive activity
Market opening	Takes 2 years, market opening in model year 5	Takes 3 years, market opening in model year 5	As previous scenario	Takes 4 years to open, market opening in model year 5
'Active' share of the market	50% active, taking 10 years to develop	30% active, taking 15 years to develop	As previous scenario	15% active, taking 20 years to develop
Efficiencies applied throughout the value chain	Efficiencies based on precedent from Cave's analysis of the benefits of competition.	As previous scenario	As previous scenario	Efficiencies approximately half those in other scenarios based on Cave
Switching	30% of the market switching, speedy engagement through apps etc. The same number	10% of the market switching each year, engaging for 15 minutes. The same number	As previous scenario	5% of the market switching, engaging for 30 minutes. The same number

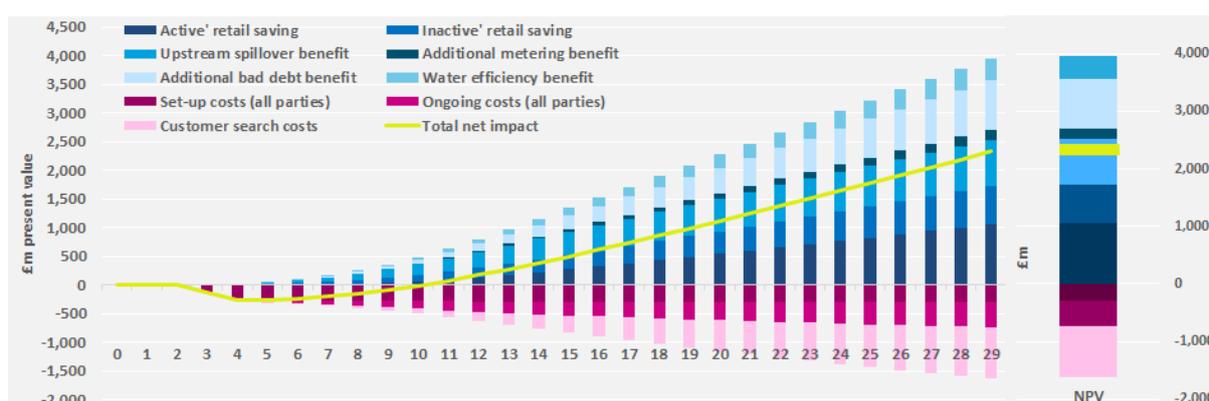
Area	Scenario 1 – low cost, widespread innovation, strong competitive activity	Scenario 2 – low cost, less innovation, good competitive activity	Scenario 3 – high cost, less innovation, good competitive activity	Scenario 4 – high cost, little innovation, weak competitive activity
	engaging but not switching.	engaging but not switching.		engaging but not switching.
Companies' acquisition costs	Costs companies circa £8 to acquire a customer	Costs companies £15 to acquire a customer	As previous scenario	As previous scenario
Bad debt	Bad debt savings of 2% per year in addition to general efficiencies, reflecting scope for bad debt savings	Bad debt savings of 1% per year in addition to general efficiencies, reflecting scope for bad debt savings	As previous scenario	No further bad debt savings over and above general efficiencies
Metering	Additional savings to metering costs of 1% over and above general efficiencies.	No additional savings to metering costs over and above general efficiencies	As previous scenario	As previous scenario
Water efficiencies	Metered customer in the 'active' part of the market save 20% of their water consumption	Metered customer in the 'active' part of the market save 10% of their water consumption	As previous scenario	No water efficiency benefits realised
Resilience	Higher resilience benefit linked to greater reduction in consumption. Not quantified at initial findings.	Additional benefits of resilience from lower consumption. Not quantified at initial findings.	As previous scenario	No benefit to resilience.
Companies' implementation costs (over and above separation)	£200m up-front, £20m ongoing Greater than for business retail market opening. Around twice as high as estimated set up for the business market, with similar ongoing costs. Reflecting possibility of synergies despite higher customer numbers.	As previous scenario	£400m up-front, £40m ongoing Significantly greater than for business retail market opening. Around four times higher than estimated set up for the business market, with ongoing costs roughly double. Reflecting stronger impact of larger customer numbers on cost.	As previous scenario

Area	Scenario 1 – low cost, widespread innovation, strong competitive activity	Scenario 2 – low cost, less innovation, good competitive activity	Scenario 3 – high cost, less innovation, good competitive activity	Scenario 4 – high cost, little innovation, weak competitive activity
Market operator costs, regulatory costs	Business retail implementation costs less 25%	Business retail implementation costs	Business retail implementation costs plus 50%	As previous scenario

Scenario 1 – low cost, widespread innovation and strong competitive activity

Under the assumptions in this scenario, the estimated net present value (NPV) of potential costs and benefits is £2,327m. Based on the number of connected households today, that amounts to a NPV of £96 per customer. The average within-year impact over the 30-year modelling period is £6.4 per customer per year, based on the expected number of households in each year.¹⁸ The development of net present value over time is illustrated in Figure 1, which shows the cumulative impact of estimated costs and benefits over time, as well as the total net present value over the 30-year period modelled.

Figure 1: Cumulative present value of costs, benefits and net benefits, £m (2012/13 prices)



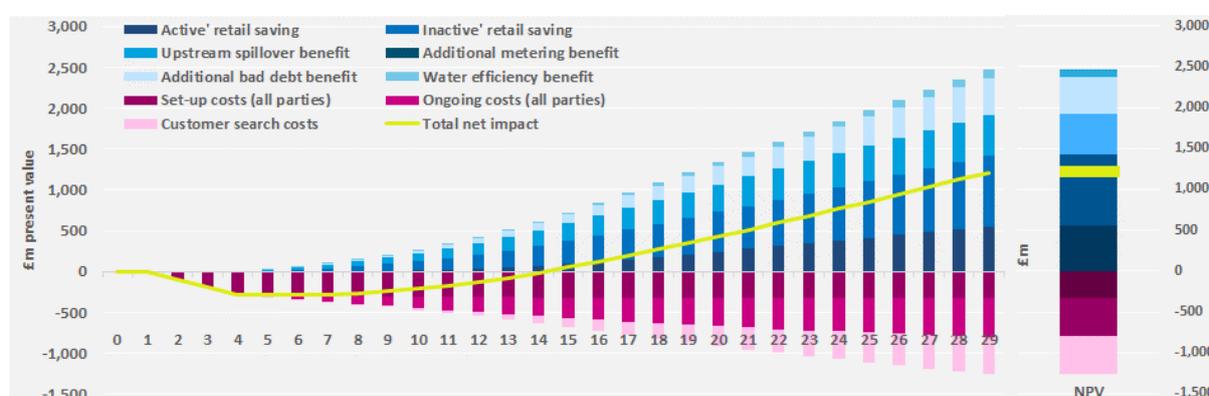
Source: Ofwat analysis

¹⁸ All results are quoted in 2012/13 prices.

Scenario 2 – low cost, less innovation and good competitive activity

Under the assumptions in this scenario, the estimated net present value (NPV) of potential costs and benefits is £1,215m. Based on the number of connected households today, that amounts to a NPV of £49 per customer. The average within-year impact over the 30-year modelling period is £3.6 per customer per year, based on the expected number of households in each year. The development of net present value over time is illustrated in Figure 2, which shows the cumulative impact of estimated costs and benefits over time, as well as the total net present value over the 30-year period modelled.

Figure 2: Cumulative present value of costs, benefits and net benefits, £m (2012/13 prices)

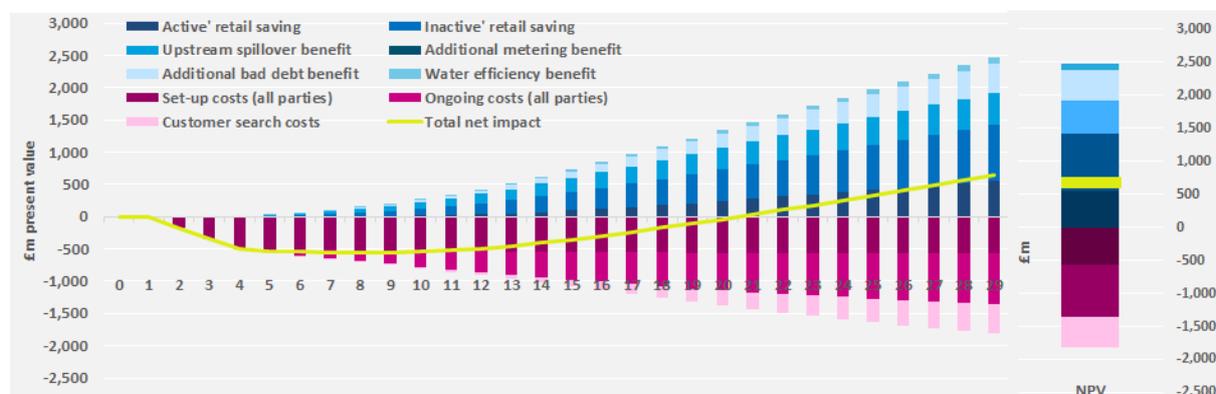


Source: Ofwat analysis

Scenario 3 – high cost, less innovation and good competitive activity

Under the assumptions in this scenario, the estimated net present value (NPV) of potential costs and benefits is £655m. Based on the number of connected households today, that amounts to a NPV of £23 per household. The average within-year impact over the 30-year modelling period is £2.4 per customer per year, based on the expected number of households in each year. The development of net present value over time is illustrated Figure 3, which illustrates the cumulative impact of estimated costs and benefits over time, as well as the total net present value over the 30-year period modelled.

Figure 3: Cumulative present value of costs, benefits and net benefits, £m (2012/13 prices)

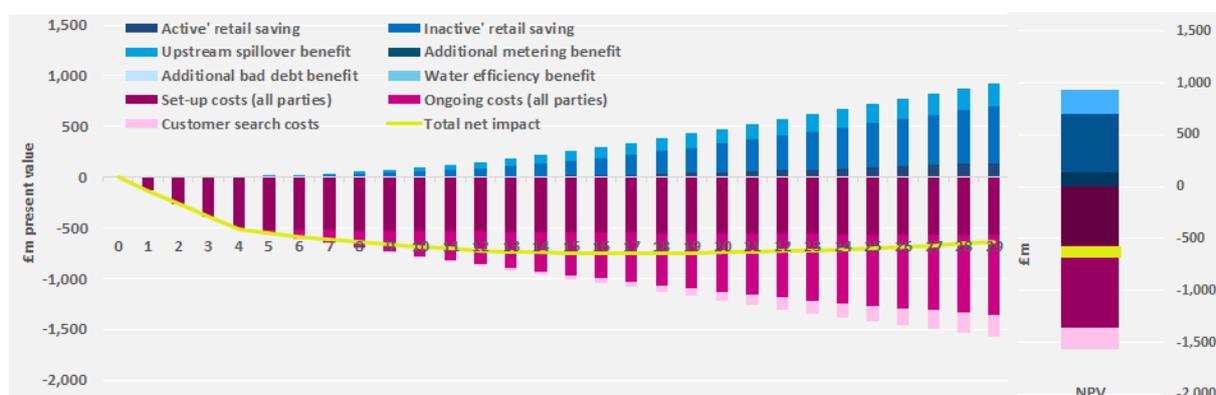


Source: Ofwat analysis

Scenario 4 – high cost, little innovation and weak competitive activity

Under the assumptions in this scenario, the estimated net present value (NPV) of potential costs and benefits is £-639m. Based on the number of connected households today, that amounts to a NPV of £-31 per household. The average within-year impact over the 30-year modelling period is £-1 per customer per year, based on the expected number of households in each year, although by the end of the period the within-year impact is positive, at £1.7. The development of net present value over time is illustrated Figure 4, which illustrates the cumulative impact of estimated costs and benefits over time, as well as the total net present value over the 30-year period modelled.

Figure 4: Cumulative present value of costs, benefits and net benefits, £m (2012/13 prices)



Source: Ofwat analysis

3.2.2 Breakdown of costs and benefits

This section explores the share of costs and benefits across several categories. However it has not been possible to quantify certain costs or benefits at this stage, including some effects of water efficiency, potential improvements in wastewater management, the impact on resilience and service quality for residential customers. Despite using the best information available currently, other benefits are estimated on information that is not as strong as we would wish for.

We have broken the costs down according to the type of cost. These include setup costs (to open the market), ongoing costs of operating the market and customer search costs for those engaging in the market. The majority of benefits in each case is realised within the retail part of the value chain.

This split simply recognises that some customers benefit from competition more than others. An 'active' share of customers benefits from the 'full' gains identified in this analysis, while an 'inactive' share of customers is subject to lower gains. The active share can be viewed as informed and actively engaged in considering other offers. Not all 'active' customers switch each year, so in all scenarios the annual share of customers switching is lower than the active share, as outlined below.

Wider benefits also occur in the wholesale part of the value chain, through increased pressure from residential retailers on their wholesalers, as a consequence of retail competition. The majority of benefits in each case are realised within the retail part of the value chain.

As outlined, some scenarios incorporate added efficiencies in metering and bad debt. Bad debt efficiencies in particular lead to large savings, because bad debt costs comprise a large share of overall retail costs (currently around 40% based on PR14 data). Additional savings in these areas reflect specific potential for additional cost reductions in the water sector, as outlined above and in the Annex below.

We have broken costs down according to stakeholder types that incur those costs, to the extent that we can disaggregate given available data. In all but Scenario 1, ongoing costs of operating the market form the largest share of costs in present value terms. This reflects the significant ongoing costs of competition, across companies, the regulator and the market operator.

In Scenario 1, switching costs (customer search costs and company acquisition costs) are the highest of any category. In this scenario, costs per switch are lower, but this is offset by the assumption that more switching occurs, partly as a

consequence of its lower cost (to customers and to companies). This contributes to the speedier and more far-reaching development of competition in that scenario.

Table 2 shows the breakdown of costs and benefits in each scenario, in present value terms and 2012/13 prices.

Table 2: Present value of costs, benefits and net benefits, £m (2012/13 prices)

Breakdown of costs and benefits (£m NPV)	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Retail savings in active share of the market	1,053	551	551	140
Retail savings in inactive share of the market	669	871	871	561
Wholesale spill-over benefit	811	496	496	228
Additional metering benefit	177	0	0	0
Additional bad debt benefit	856	455	455	0
Water efficiency benefit	389	98	98	0
Set-up costs (all parties)	-294	-326	-559	-564
Ongoing op. costs (all parties)	-441	-474	-801	-794
Switching costs (customers & companies)	-893	-455	-455	-209
Total net present value	2,327	1,215	655	-639

Source: Ofwat analysis

3.3 Impacts on different customer groups

In any market outcomes can differ significantly across customers or customer groups. In other utility markets, such as energy and banking, customers' experiences and levels of engagement can vary widely based on their individual circumstances. There are many factors which may influence customers' experiences of competition in water and how they interact with the market. Examples may include:

- their method of payment;
- the service and charges they receive from their current supplier;
- whether they are in debt to their water supplier;
- whether their supply is metered;
- the amount of water that they use;
- the area of the country in which they live;
- whether they have access to (and are confident in using) the internet;

- whether they have a medical requirement for water; and
- whether they engage with other similar markets, such as energy, telecoms or banking.

Each of these factors may influence whether (or how) a customer might engage with a future residential retail water market, the benefits available to them in the market and their experiences of the market.

A significant number of responses to our call for evidence raised issues relating to the distributional effects of introducing competition. We set out our initial qualitative thoughts on the points raised by stakeholders in our stakeholder views and issues document.

Distributional outcomes of competition in the residential retail water market would depend on many aspects of market design. Illustrations of the potential impact of competition on distributional outcomes are generally cost-based. However, at this early stage our view of market design is high-level and subject to future policy decisions. For example, if the market design placed any restrictions or obligations on retailers relating to the payment methods they have to offer consumers, this could impact consumer pricing.

The aim of this assessment is to allow the UK Government to decide whether it wishes to proceed with competition in the residential retail market in England. Our top-down analysis considered scenarios at the aggregate level of the market in England as a whole. It does not provide a complete picture of the impacts of competition for individual customers, nor different groups of customers. To understand this, a disaggregated analysis of the costs and benefits would be required.

Our aim for these initial findings is to estimate the potential costs and benefits of residential retail competition at an aggregate level. Our top-down aggregate approach is well suited to this task, though it has also limited the extent of distributional analysis that we have been able to do.

It is possible to compare benefits in the ‘active’ share of the market with benefits in the ‘inactive’ share of the market. This analysis has not modelled the process of competition, so does not seek to estimate individual outcomes for customers, or the competitive behaviour of retailers operating in the competitive market.

The comparison below therefore should not be taken as the difference between bill savings that could be achieved by ‘active’ customers compared with ‘inactive’ customers. It also only reflects the specific difference in one assumption – that on

efficiencies in the retail value chain. It does not reflect other qualitative impacts such as different services, improvements to service quality, nor resilience.

Outcomes for individual customers and customer groups would depend on individual and collective customer behaviour, as well as the developing dynamics of competition and retail strategies of retailers. In practice, if residential retail competition were introduced, retailers may differentiate prices, price structures and service offerings to customers. Outcomes could differ depending on many factors not captured by this notional ‘active’ and ‘inactive’ split, not least individual customers’ engagement with the market.

The net impact per customer in the ‘active’ share of the market compared with the ‘inactive’ is outlined below for each of the four scenarios described above.

Table 3: Present value per customer for active and inactive shares of the market

£NPV per customer	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Active share benefit	£121	£81	£56	£ -9
Inactive share benefit	£75	£38	£12	£ - 34

Source: Ofwat analysis

3.3.1 Further sensitivity analysis

This section explores the relative importance of the potential costs and benefits we modelled, in terms of their sensitivity to the ranges applied to each key assumption, set out in the annex to this document.

Specifically, this section examines how altering individual assumptions affects the estimated total net impact, all others being held constant. It therefore illustrates the relative importance of each assumption, each being ranked according to the size of the assumption range. Those ranked highest have the largest effect on the total NPV. We seek further evidence from stakeholders during this consultation, particularly for higher-ranked assumptions.

Scenario 2 is used here as a benchmark against which other assumptions are tested. The NPV total net impact of this scenario is £1,215m. The variation is then compared by drawing out the scale of changes in this figure. We assumed that the probability distribution between the low, central and high assumptions are uniform. In other words, that one value of assumption is not more likely to happen than another, for any value within the specified range for each assumption.

The table below shows how much the total net impact (£m NPV) varies when each respective assumption changes from low to high, holding everything else constant. The changes in total net impact are described by the minimum and maximum values, as well as the overall range, for each assumption. The assumptions are ordered in terms of the magnitude of the effect changing them has on total net impact, from 1 to 15.

Table 4: Summary of sensitivity analysis, assumptions ranked in order of largest effect on £NPV, highest first

Assumption that is inputted into the model					Variation in total net impact (£m NPV)		
Assumption		Central	Low	High	Min	Max	Range
1	Additional bad debt savings - ongoing	-1% per year	0%	-2% per year	760	1606	846
2	Wholesale spill-over - one-off	-0.50%	-0.25%	-0.75%	967	1463	496
3	Retail efficiencies 'active' share - ongoing	-1.219%	-0.75%	-1.219%	898	1215	317
4	Companies' systems costs: ongoing	£ -20m	£ -20m	£ -40m	926	1215	290
5	Retail efficiencies 'active' - one-off	-8.125%	-3.75%	-8.1%	986	1215	229
6	Companies' systems costs: up-front setup	£ -200m	£ -200m	£ -400m	1014	1215	202
7	Water efficiency total saving over development of comp.	-10% per metered customer in active share	0%	-20% per metered customer in active share	1118	1313	195
8	Additional metering savings - ongoing	0%	0%	-1%	1215	1391	176
9	Company cost of a switch	£ -15 per switch	£ -8.3 per switch	£ -15 per switch	1215	1357	142
10	Customer costs (for customers engaging)	£ -3.5 per switch	£ -1.75 per switch	£ -5.25 per switch	1146	1284	138
11	Market operator costs: ongoing	£ -5.6m	£ -4.2m	£ -7m	1195	1235	40
12	Companies' separation costs: total ongoing costs of separation (all companies)	£ -5.5m	£ -4.1m	£ -7m	1197	1233	36
13	Companies' separation costs: total up-front	£ -80m	£ -60m	£ -100m	1199	1231	33

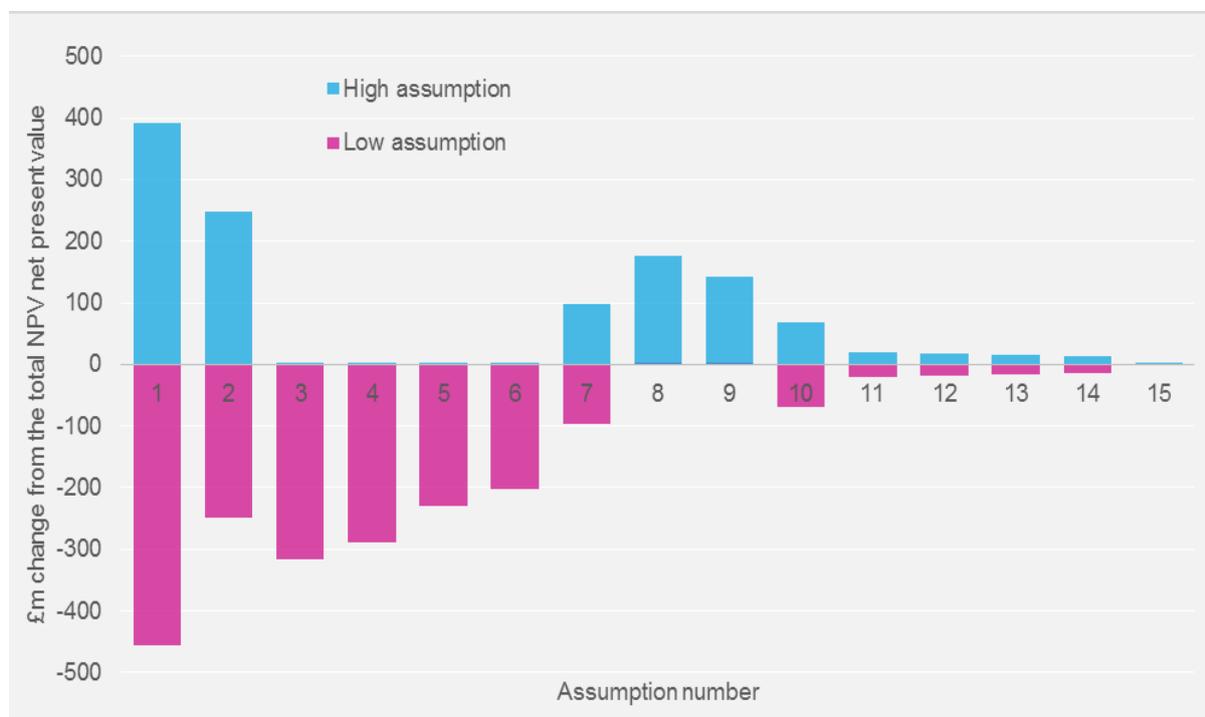
Assumption that is inputted into the model				Variation in total net impact (£m NPV)			
Assumption		Central	Low	High	Min	Max	Range
	separation costs (all companies)						
14	Market operator costs: up-front setup	£ -60m	£ -45m	£ -75m	1202	1229	27
15	Regulator costs: up-front setup	£ -5.6m	£ -4.2m	£ -7m	1214	1217	3

Source: Ofwat analysis

There are two assumptions where their variation has a significantly higher effect on total net impact. These are savings to bad debt and one-off wholesale cost efficiencies. When varying the bad debt costs assumption from low to high, the difference between the minimum and maximum values of total net present impact is £846. The assumption with the second highest impact is the one-off wholesale spill-over efficiencies. When varied from low to high, the total net present value changes by £496m.

Figure 5 depicts the £m change in total net impact when the assumptions are set at their lowest and highest values.

Figure 5: Summary of sensitivity analysis breakdown between positive and negative impacts compared with Scenario 2, £NPV, highest ranked first



Source: Ofwat analysis

3.4 Questions from this chapter

We welcome views from respondents on:

- the assumptions that need to be made to undertake rigorous distributional analysis;
- the factors that it would be helpful for distributional analysis to address (noting our suggested list above); and
- any evidence they can provide to support this analysis.

4. Responding to this consultation

We welcome responses to our initial findings. We have set out some questions at the end of Chapters 2 and 3, but we welcome responses on any part of our analysis.

Please send responses by Monday 8 August 2016. You can do this:

- **by email:** If you would like to submit your response by email or if you would like to attach a document in response to the call for evidence, please email a copy to: household.review@ofwat.gsi.gov.uk
- **by post:** Household Retail Project, Ofwat, 21 Bloomsbury Street, London, WC1B 3HF.

Earlier responses and staged responses where evidence is already available will be very helpful to the review.

We aim to follow an open and transparent process. We think an important part of this process is allowing all stakeholders to understand the views of other parties and the evidence on which those views are based. Consequently, we will look to publish all the information and evidence we receive and would encourage respondents to publish their submissions where practical, as this aids transparency and enable us to link evidence we use to the original source.

We will assume that any material submitted can be published unless explicitly stated otherwise. We would ask in the interests of openness that where a request is being made for material not to be published, this is focused on specific text rather than a blanket request.

Appendix 1 – Detailed approach to quantitative analysis

This section describes the approach to quantitative estimation.

Estimating the potential costs and benefits of residential retail competition

Potential costs and benefits of residential retail competition are included in this analysis only where they would be attributable specifically to any decision to introduce residential retail competition. Costs have been quantified where possible within the scope of this work.

As outlined above, this assessment does not seek quantify all potential costs and benefits of residential retail competition in water. The costs that we quantify are broken down in to the different costs that parties in the sector would potentially face:

- set-up and ongoing **company costs**, including potential costs of implementing systems required to operate in a competitive market and interact with the market operator, costs of separation and costs of acquiring customers in the competitive market;
- **market operator costs**, for setting up and operating systems and processes required to register customers, manage data and operate in the market;
- **regulatory costs**, including implementing the regulatory framework for residential competition, monitoring and actively regulating a potential residential retail market and contributing to regulatory policy making; and
- **customer costs**, specifically the time costs associated with engaging in the market, including searching alternative supply offers and switching suppliers.¹⁹

The introduction of business, charity and public sector retail competition was accompanied by an increase in net margin from 1% to 2.5% for companies wholly or mainly in England.²⁰ This short-term increase in margin represents a transfer from customers to water companies, rather than an overall net cost of competition. The potential effect of residential retail competition on margin is uncertain and would be subject to a regulatory decision. Even if there were an increase in residential retail margin, this could potentially have no net cost to customers if deducted from the wholesale weighted average cost of capital. Therefore, no specific assumption is made in this analysis about the margin that would be required for retailers if the

¹⁹ Customers' time costs have been included on the basis that those costs are a necessary part of the introduction of competition; without customer engagement competition is not likely to deliver potential positive effects that have been estimated in this analysis.

²⁰ Ofwat (November 2015), [Consultation on the review of non-household retail price controls](#)

residential retail market is opened to competition. Nonetheless this would be an important policy question for government should residential retail competition be introduced and could have significant impacts on customers. As with other potential effects described above but not quantified here, these should be important considerations for the potential introduction of residential retail competition, despite not being included in this quantitative analysis.

New entrants' costs have not been specifically quantified, but are effectively incorporated into this analysis, on the basis that they will be no higher than for existing incumbents. If retail exits occur and new entrants' costs are lower than incumbents' costs, set-up and ongoing costs could be lower than estimated in this analysis.

Quantified benefits have been broken down according to specific drivers of those benefits where possible and include the following:

- **efficiency gains in the residential retail cost base**, realised through one-off and ongoing efficiency gains resulting from the introduction of competition;
- **efficiency gains in the wholesale cost base**, realised through increased scrutiny from retailers on the regulatory processes that determine wholesale prices, and potentially in future through competitive pressure that competitive retailers may exert on wholesalers;
- potential **additional savings to metering costs**, if competitive retailers are able to drive efficiencies in metering services;
- potential **additional saving to bad debt costs**, which could result from savings to bad debt costs in future; and
- potential **water efficiency** that competitive retailers may encourage through innovation in their product and services offers, with potential benefits associated with any overall reductions in water usage and improvements in the resilience of water supply.

Benefits identified but not quantified include benefits to resilience of water supply and wastewater infrastructure, environmental benefits of water efficiency, effects on service quality in providing water and wastewater services, and all indirect and induced wider effects beyond the water sector.

All estimated potential costs and benefits are compared with a counterfactual, described in detail below. This seeks to capture what is currently known about how the sector and value chain will develop absent residential retail competition.

Timeframe and timing of competition

The modelling timeframe is thirty years, following standard government practice for policy assessment and following previous analysis of the introduction of retail competition into the business water sector.²¹ The quantitative modelling assumes that market opening occurs five years into the modelling period. Set-up costs are modelled to be incurred over a three to four year period prior to market opening, depending on scenario.²²

This assessment uses a ‘present value’ approach that discounts future costs and benefits over time. It uses a discount rate of 3.5%, as recommended in the Green Book.²³

Geographic coverage

This analysis estimates possible costs and benefits from introducing residential retail competition in areas currently served by companies based wholly and mainly in England. This is based on the current legislative boundary applicable to any UK government decision in relation to residential retail competition in water.

The quantitative model

This section explains the quantitative modelling in detail, including the assumptions that were used in this modelling.

Estimating the counterfactual

The counterfactual describes a best estimate of what would happen without the introduction of residential retail competition, taking into account all known policy decisions and their future impact. The counterfactual is aggregated from individual company data from PR14 to 2019/20. The value chain is built up from the wholesale element of the value chain, then adding the retail element to the wholesale. This is the benchmark against which our estimates of the impact of residential retail competition are compared.

²¹ HM Treasury (July 2011), [The Green Book, Appraisal and Evaluation in central Government](#), para 5.11

²² With market opening occurring at the end of the specified year.

²³ Ibid.

PR14 data is the basis for the wholesale element of the value chain to 2019/20, comprising the following (with further details set out in the [PR14 section of our website](#)):

- number of households connected (metered and un-metered for water only, wastewater only and for water and wastewater);
- the share of costs in company submissions for PR14 (to break down allowed revenue into categories); and
- allowed revenues for wholesale, taken as the best proxy for retailers' wholesale costs, split by water and wastewater.

Beyond 2019/20, the counterfactual requires assumptions to be made about how the value chain will develop, to model the value chain for the required period. Defra's water bills projection model²⁴ has analysed future influences on the price level of water bills, including the influence of changing enhancement expenditure, operational expenditure, and capital maintenance. Double counting benefits from key headline future policy changes is avoided by virtue of their inclusion in Defra's water bills projection model, on which the counterfactual is based:

- ongoing efficiency savings from regulation;
- the introduction of business retail competition; and
- the introduction of wholesale market reform.

Ongoing efficiencies from regulation are assumed within Defra's work to diminish over time. Specifically, it assumes that ongoing efficiencies are 1% per annum from 2020-25 and 0.5% per annum thereafter.²⁵ This reflects the view that while comparative regulation in the water sector has led to significant cost-savings for consumers in recent years (and particularly with PR14), gains from comparative regulation are likely to diminish over time. Defra's modelling is built using the Water Resource Management Plans baseline data on supply and demand and PR14 Final Determination data on costs and financing.

This approach means that efficiency savings applied to the counterfactual take into account what is currently known about likely developments in the value chain, including future policies.

Based on Defra's water bills projection model, our modelling estimates the average compound annual growth rate implied by estimates of total expenditure to 2040 in Defra's water bills projection model and applies this rate to the full period included in this model. This growth rate is applied to wholesale costs to estimate total wholesale

²⁴ Defra (July 2015), Cumulative impact of regulation and policy on future water bills.

²⁵ Defra (July 2015), Ibid. p47.

costs within the value chain. This method reflects the Defra modelling, but also allows the use of the latest available PR14 data as the basis for the counterfactual to 2019/20.

Counterfactual wholesale costs are assumed to change at a compound annual growth rate of -0.66% in the counterfactual. A 'high' sensitivity reflects Defra's 'high drivers' scenario, and costs are assumed to change at a compound annual growth rate of 0.78% beyond 2019/20. Defra's high drivers scenario is given by setting all sensitivities to the high end to give an absolute maximum. The main drivers in this scenario are high efficiency gains, WACC, real price effects and the impact of policies. However, this has not been used in scenarios described here, because Defra considers it as illustrative, with a very low probability of occurring.

For the retail element of the value chain, the following PR14 data has been used for the period to 2019/20:

- operational expenditure in retail; and
- capital expenditure (depreciation) in retail.²⁶

Counterfactual retail costs are estimated using the same methodology. Retail costs beyond 2019/20 are based on how much allowed retail revenue changes over time in Defra's water bills projection model. Our modelling is based on the average compound annual growth rate implied by estimates of allowed retail revenue to 2045 in Defra's water bills projection model (the end of the modelling period considered in this analysis: 2015/16 to 2044/45). Counterfactual retail costs are assumed to change at a compound annual growth rate of 0.72% in the counterfactual.

This analysis allows for the costs of bad debt and the costs of metering to be included or excluded from the cost base to which competitive efficiencies are applied, or for additional efficiencies to be applied specifically to those cost items. Nonetheless in all scenarios considered in this analysis, bad debt costs and metering costs are included as 'retail activities', i.e. considering a 'thick' competition model that includes these activities.

Bad debt and metering costs are estimated as a component of total retail costs, based on the share of costs included in companies' submissions to PR14, applied to allowed revenue for PR14.

- metering, which includes all aspects of metering operation, but excludes the assets; and

²⁶ For simplicity, we have assumed that total depreciation of assets at the retail level is equal to capital expenditure.

- bad debt, which separately comprises debt management costs and costs associated with doubtful debts.

We do not have any specific information on how either of these costs will change as proportions of total retail costs over modelling period. Companies' submissions for PR14 indicated that the proportion of total cost accounted for by bad debt would remain roughly constant to 2019/20. Therefore, we assumed that their respective proportions of making up total retail costs remain constant over the modelling period. The proportions of metering costs and bad debt costs that make up retail costs are 17% and 43%, respectively.

Each assumption used to estimate the value chain beyond 2019/20 is applied universally across all companies. It was not possible nor appropriate to differentiate these assumptions by company. This analysis does not seek to forecast or estimate the impact of individual companies' performance or behaviour. This aggregation produces an overview of the value chain as a whole.

Estimating benefits from introducing retail competition

All calculations that are used to estimate the benefits from introducing retail competition are implemented at an aggregate, market-wide level, against the aggregated counterfactual described above. This modelling allows specification of a 'one-off' cost reduction to be applied at the beginning of the period when competition is introduced and an 'ongoing' efficiency saving applied annually over time. Cost savings were also linked to an assumption about the timing of the introduction of competition, such that benefits only apply from that date²⁷.

To address the uncertainty around benefits, ranges have been created around central estimates for each category of benefits. Sensitivity analysis has been conducted within these ranges, as summarised above. These ranges are generally set to +/- 25%, except where specific evidence or rationale is applied to identify different limits to the range.

Benefits also do not apply in full when competition is introduced. Benefits are phased in over a time period specified by modelling assumptions and described in detail below. These benefits are assumed to grow linearly over that specified period until they reach the maximum specified amount. For example, if ongoing cost savings of

²⁷ This is a simplifying assumption made for modelling purposes. In practice, some benefits might be realised before market opening, particularly if separation, retail exit and/or mergers occur prior to market opening.

1% per year are achieved ten years after competition is introduced, savings that apply in year five are 0.5%.

Modelling the effectiveness of competition

This analysis seeks to take into account the notion that competition does not operate perfectly and also takes time to develop when a market is opened. Consequently, the method applied splits the market (and customers) into an ‘active’ share and an ‘inactive’ share. This is a simple methodological split through which it is recognised that the full potential benefits of competition would be likely to apply to only a share of the value chain, while also recognising that all the value chain would at least be subject to some of those efficiencies. While some parts of a potential residential retail market may be more effective than others, cost savings or improvements to service achieved in serving the most active, competitive part of the market, would likely spill over to any less active part of the market. For example, retailers’ cost savings in serving some of their customers would apply to all their customer data systems or customer service centres.

This simplified modelling aims to reasonably reflect the practical effect of retail competition on the aggregate savings across the market. In the ‘active’ share of the market, the full potential benefits of competition apply and in the ‘inactive’ share only a portion of those benefits apply. This methodology does not seek to estimate the potential distributive effect on ‘active’ customers compared with ‘inactive’ customers. As outlined above, further analysis is required to determine potential distributional effects.

The share of customers that are likely to receive the ‘full’ potential benefits of competition is a matter of some debate. Assumptions made in this analysis are based on previous work and evidence from other markets, though no direct comparison with residential retail competition in water is available.

Cave’s assessment of business retail competition for the Water Act 2014 assumed that for business customers with a consumption of less than one mega litre, 10% of the cost-base was ‘contestable’. This does not mean that the review assumed that 10% of customers switched suppliers. Provided that there is a threat of competition, it is not necessary that customers change retailers in order to realise the benefits of competition. We previously recognised²⁸ that in Scotland few customers initially switched retailers, but many were offered better deals by the incumbent.

²⁸ Ofwat (2011), [Ofwat’s review of the evidence base for retail competition and separation](#).

Both we and Cave recognised that this 10% assumption is conservative. Comparison with other sectors also provides useful evidence to inform this assumption. Around 30% of residential gas and electricity customers still with their incumbent are now no longer on suppliers' more expensive 'standard variable rate' tariffs.²⁹ Broadly these customers can be said to have engaged in the market, giving an indication of the customers that have engaged in that market. Residential energy bills are typically (and on average) significantly higher than water bills. However, as discussed above, engagement may in any potential future water retail market may be driven by other factors or through bundling with other utilities. Our customer research shows that 50% of customers would be interested in switching their supplier. Nonetheless, in the counterfactual it seems reasonable and conservative to assume that 30% of households are contestable.

In Scotland, around 40% of the market (some 45,000 business customers) have renegotiated their tariff³⁰ and as of 2013, 60% of business customers were getting lower bills than would have been the case without competition.³¹ In that market, the benefits of competition have extended well beyond those customers that have switched (5% of customers by June 2013).³²

Even taking into account the differences between business and residential markets, these examples suggests that in a central assumption, a reasonable value for the active share in the long run is 30%, by the time competition is fully developed.

This analysis also seeks to take into account that competition develops over time. It does so by creating a proxy for the development of competition, profiled over time. Many of the costs and benefits (and measures customer engagement) are assumed to be linked to this profile, such annual that costs and benefits each increase as competition develops. The full extent of efficiencies and costs is not applied until this profile reaches its maximum, after a specified amount of time in each scenario. All direct efficiencies applied to the retail portion of the value chain are subject to this profile (including one-off and ongoing efficiencies).³³

In the central assumption, this profile is set to a duration of 15 years. This seems a reasonable time period for the full effects of competitive rivalry, potential consequent

²⁹ Competition and Markets Authority (July 2015), [Energy Market Investigation](#), Summary of Provisional Findings Report,

³⁰ WICS (December 2010), [Competition in the Scottish water industry, achieving best value for water and sewerage customers 2009-10](#), p7

³¹ WICS (October 2013), [Water and sewerage services in Scotland: An overview of the competitive market](#) p6.

³² Ibid. p6.

³³ One-off efficiencies are still applied over time as the 'abatement factor' expands over time. For example, if one-off efficiencies of 10% are estimated, the application of these one-off efficiencies to the relevant part of the market is phased on over the period over which these efficiencies are assumed to take to reach their maximum effect.

separation, potential new entry and alternative business models to take effect. Comparison with other utility markets, such as telecoms, indicates that competition can take time to develop. But wider dynamics can also have significant effects on the development of retail competition, such as the effect of increasing wholesale prices in energy, or the continued fast pace of technological change in mobile telecoms. Therefore none of these markets can be taken as a direct proxy for the time period taken for competition to develop and factors affecting its potential development in residential water supply are difficult to predict.

Efficiency savings on retail costs

This section describes the efficiency savings that are applied to the retail supply chain, in the ‘active’ share and the ‘inactive’ share as described above. The analysis modelled ongoing benefits from competitive rivalry between retailers, over and above the ongoing savings from comparative regulation that are already built into the counterfactual. These are applied as a compound annual percentage saving, then compared with the counterfactual to estimate a benefit figure.

This saving is applied to operational and capital expenditure equally, using the same methodology. While in practice, efficiencies may differ between operational and capital expenditure, this simplifying assumption was made absent good evidence supporting differentiated assumptions for capex and opex.

Efficiency savings in the ‘active’ share of the market

In previous analysis of the introduction of business retail competition carried out by Cave, ongoing efficiencies absent competition are assumed to be 2% per year. The Cave Review is clear that benefits of retail competition occur above and beyond those benefits. The counterfactual for this work, based on Defra’s future water bills work, assumes that efficiencies realised through comparative regulation decrease over time. Specifically, Defra’s work, on which this counterfactual is based, assumes that savings from competition are 1% annually for what will be PR19 and 0.5% from then on.

UK Government has estimated efficiencies that the introduction of business retail competition will bring to the residential retail value chain³⁴. These benefits over and above comparative regulation (for businesses) have already been ‘banked’ and so must not be double-counted in this analysis. Those benefits are incorporated into the counterfactual for this analysis and so must be ‘removed’ from the incremental

³⁴ Defra (May 2013), Ibid.

efficiencies that are realised through the introduction of competition. Consequently, this analysis reduces its estimates of incremental efficiencies in the residential retail value chain by the amount of spill-over benefit assumed in the government's impact assessment of the Water Act 2014.

Our previous work described a range of estimates of up-front and ongoing efficiencies that could arise from the introduction of retail competition, in the context of introducing business retail competition³⁵. These estimates detailed a range of sources that were considered to support assumptions in the Cave review that one-off efficiencies from the introduction of competition would amount to 10% in the counterfactual, with a low and high sensitivity of 5% and 20% respectively. Similarly, those sources were considered reasonable to support the Cave Review assumption of 1.5% ongoing efficiencies from competition, with low and high sensitivity of 1% and 2% respectively. These assumptions were not specifically adapted to being applied to the business part of the water sector, so can be applied in the same way to the residential water retail. Little additional evidence has been found since we last considered these estimates.

For this analysis, two further considerations were taken into account when applying those previous assumptions in this context. To avoid double counting benefits that have already been assumed in analysis of business retail competition, estimates are scaled down by the spill-over benefit already applied to residential retail³⁶.

In Scotland, the introduction of retail competition in business supply has led to large benefits over time. In January 2012 Business Stream reported that since the April 2008 introduction of business retail competition in Scotland it had lowered costs by 18%.³⁷ However, Business Stream deals with only one water undertaker, meaning the comparison with England is not equivalent. This was achieved despite significant savings realised through regulation in the period leading up to competition – a 35% reduction in costs from 2002 to 2012.³⁸ WICS identified in 2011 that ongoing efficiencies were realising efficiencies of 1% per year, over and above the status quo of comparative regulation, applied to the entire business retail cost base.³⁹

Taking all this evidence into account, it seems reasonable to assume the same generalised efficiency savings as applied to business competition, scaled down to

³⁵ Ofwat (2011), *Ibid*, Section 5.1.

³⁶ The latest non-household impact assessment applied 18.75% of the efficiencies achieved in non-household supply to household retail activities, as spillover efficiency improvements. Therefore, this analysis applies 81.25% of the headline efficiencies figures set out here, avoiding double counting the 18.75% that are already likely to occur from the introduction of non-household retail competition.

³⁷ Business Stream (2012), [Written Evidence submitted by Business Stream to the Environment, Food and Rural Affairs Committee](#)

³⁸ WICS (2011), [Retail Competition: The Story so far, the journey to come](#)

³⁹ *Ibid*. page 17.

take avoid double-counting benefits already assumed in the business competition impact assessment. Potential efficiency savings for the active share of the market are assumed to be 8.13% up-front and 1.22% per year ongoing savings as a central scenario. A low sensitivity has been added, with up-front efficiencies of 3.75% and ongoing efficiencies of 0.75% per year respectively. No high sensitivity has been added, reflecting a cautious approach that seeks to avoid over-estimating efficiencies (over and above levels that the literature suggests possible).

The government impact assessment of business retail competition notes the large body of academic evidence that suggests a 30% uplift in ongoing efficiencies as a result of competition over regulation is likely to be a conservative assumption. In other regulated sectors, empirical evidence suggests that the uplift in efficiency gains over and above regulation following the introduction of competition is anywhere between 15% and 87% with simple average rates of around 40%⁴⁰. Over the modelling period considered in this analysis, assumptions applied to Scenario 2 lead to efficiency savings of 32% overall by the end of the period (comparing total costs per customer with today). The respective figure for Scenario 1 is 46%. This sense-check suggests that even the most optimistic Scenario 1 is a plausible scenario.

Efficiency savings in the remainder of the market

As described above, government's assessment of the benefits of business retail competition incorporated spill-over benefits to the residential retail cost base. These benefits were applied throughout the cost base.

We previously noted that drivers of productivity growth from competition could be expected to affect whole businesses and therefore costs associated with serving contestable but inactive customers.⁴¹ Only where whole companies are not subject to sufficient rivalry to put pressure on their costs would this incentive not apply. These transfers of knowledge, practices or cost savings could occur within retailers in response to competitive pressure from existing retailers, new retailers, the threat of new entry, or through retailer mergers or acquisitions.

Similarly, cost savings made in the 'engaged' share of the residential retail cost base, could be expected to spill over to the remainder of the residential retail cost base to some degree. Some savings that retailers make in the 'active' share of the market are also likely to apply in the inactive share, because of shared activities, processes and assets across the two parts of the market (such as call centres or billing systems, for example). This spill-over assumption seeks to capture the

⁴⁰ As noted in the government's impact assessment of non-household retail competition

⁴¹ Ofwat (2011), para 147.

transfer of knowledge, best practice or economies of scale that could be realised even within the cost base that is not serving the ‘engaged’ part of the market.

No precedent was found for setting the level of spill-over from one part of the residential retail market to another⁴². In the absence of relevant evidence, this analysis assumes that one-off and annual ongoing efficiency savings in the inactive share of the market are half the values set out above for the active share of the market.

Wholesale efficiencies

The Cave Review estimated that the introduction of business retail competition would result in one-off wholesale efficiencies of 0.5%, applied to total wholesale operating expenditure. This was supported by a rationale that separation would lead to revelation of wholesale costs and that competitive rivalry between retailers would result in them putting pressure on wholesalers to lower prices. This would result in cost reductions. We viewed this estimate as conservative in our 2011 evaluation⁴³, on the basis that only the effect of wholesale and retail separation was estimated, whereas the effect of retailers championing the needs of consumers was not.

In the government’s updated impact assessment of business retail competition, a saving of 0.5% was applied to total in-house wholesale water and sewerage costs (totex), scaled down by the proportion spent in house. To reflect the fact that any company separation that drives wholesale efficiency will not happen immediately, these efficiencies are nonetheless assumed to be realised over time, rather than applied at the outset of residential retail market opening.

The Water Act 2014 provides for opening of wholesale markets to competition. The opening of wholesale markets is under development. We set out our policy framework in May 2016, with links to wider UK Government policy on bringing relevant parts of the Water Act 2014 into force and water licence abstraction reform. Some parts of wholesale services are natural monopoly and therefore not likely to be open to competition such as water distribution and wastewater collection. Our framework focuses on water resource and bioresource processing and disposal, which together are around 15% of customer bill, while raw water distribution and treatment amount to another 10% of customer bill.

⁴² The spill-over assumption applied in Cave’s analysis is relevant to spillover effects from non-household retail to residential retail, which differs to the application in this analysis.

⁴³ Ibid, para 171.

We identified⁴⁴ major gains in water resources are derived from avoiding costs of expensive new water resources. The extension of retail competition from business customers to residential customers would significantly increase scope for retailers to procure water resources from third parties rather than rely on incumbent wholesalers. Water resources are likely to remain localised and therefore significant market share at retail level in the relevant area is likely to be important to the development of the market. Therefore the extension of the competitive proportion of retail from around 30% to 100% of market is likely to significantly increase scope for retailer/third party water resource providers.

This analysis of potential residential retail competition applies a 0.5% efficiency saving to all wholesale totex as a central assumption, applied to the wholesale cost base, profiled over time as competition develops. Although the proportion of water purchased by competitive retailers would increase from around 30% to 100% of total market, this analysis applies the same efficiency saving on wholesale costs. This may seem conservative, but appears prudent based on two considerations, set out below.

This efficiency saving is not adjusted to take into account the significantly larger water volume for which households account, compared with business customers. This would suggest that pressure from residential retailers would be significantly greater than that exerted by business s retailers. On that basis, this assumption has been applied conservatively, even in Scenario 1.

No specific adjustment has been made to avoid double counting from the Non-Household Impact Assessment, because this figure represents savings driven by new pressure on wholesale costs from new retailers, rather than any change in behaviour among retailers serving business customers. 'Low' and 'high' sensitivities of 0.25% and 0.75% has also been created to inform additional scenarios.

Water efficiency and resilience

This analysis also sought to quantify the potential effect of residential retail competition on water efficiency. These potential costs and benefits are challenging to estimate, for two key reasons. First, the extent to which market developments will lead to water savings is highly uncertain (probably more so than for other benefits estimated here). Second, the value of those savings is also uncertain, in terms of

⁴⁴ Ofwat (May 2016), [Water 2020: our regulatory approach for water and wastewater services in England and Wales](#).

overall reduction in water demand and also in terms of potentially improved resilience of supply. These factors are explored below.

The non-household impact assessment argued that in a competitive market, the incumbent and entrants have the incentive to provide their customers with a better service by providing water efficiency advice. To recognise that this argument assumes customers are actively looking for a better service, the NHH IA applied the 2% efficiency savings in Scotland to the contestable segment of the market in England, which was equal to 930,833 MI. This saving was monetarised by adapting a Long-Run Marginal Cost estimate from the Walker report of £400/MI⁴⁵. Gains were assumed to take five years to materialise, allowing for the development of competition. Benefits were then profiled according to the development of competition over the estimated time period, under the voluntary separation assumption.

Water efficiency savings from competition have been witnessed in the business retail market in Scotland. Business Stream and other retailers in Scotland were able to reduce consumption by an average of 2 per cent for all customers⁴⁶. These savings were largely attributed to the increased incentive for incumbents to help businesses to lower their water bills. This is one way in which the benefits of competition extend to many more customers than those that have switched. In total, [Business Stream achieved more than £35 million in water efficiency savings](#).

The Water Industry Commission for Scotland reports that bespoke billing arrangements, environmental solutions and water efficiency advice offer retailers opportunities to differentiate services in addition to cost savings. It reports observing many examples of ‘gain-share’ arrangements where benefits and reduction in wastewater have been shared between the retailer and the customer.

These examples demonstrate that in principle retail competition introduces new incentives to help customers save water. However, businesses generally have larger water bills and so have larger potential absolute gains to make. Therefore retailers perhaps would have less incentives to help residential customers to save water. On the other hand, potential water saving may be one of the easiest and quickest ways that retailers can offer customers’ lower bills, given that wholesale costs form such a significant part of the overall customer bill (currently around 92% of the total residential water and wastewater bill).

⁴⁵ [The Walker Report \(2009\)](#)

⁴⁶ WICS, ‘[Competition in the Scottish water industry and the environment: submission to the EFRA committee](#)’, 2009

Below we explain the method used in this analysis to estimate how much water might be saved and to estimate the benefit attributable to saving that volume of water.

The potential scale of water efficiency savings

This analysis examined evidence on the potential for residential retail customers to improve their water efficiency.

Waterwise reported on [how much water can be saved in a household through using a variety of devices](#). It found that a water-efficient shower head could save the average household 3,762 litres of water per year and a dual-flush device could save an average household 8,371 litres of water per year, or around 2.8% and 6.2% of average residential consumption respectively⁴⁷. These examples demonstrate the scale of savings that could be made by a residential customers using existing simple devices to lower consumption.

Although these devices are available in the market today, residential retail competition could give retailers reason to promote such devices to help their customers save money. As noted above, this could offer retailers significant potential to differentiate from their competitors on overall bills, but also offers the opportunity to differentiate in terms of brand, service quality or non-price factors such as environmental considerations.

This analysis assumes that only ‘active’ customers that are metered realise any water efficiency savings. This analysis considers a range of potential levels of water savings, from zero, to 20% savings by 2030 for such active and metered customers⁴⁸, introduced over the period that competition takes to develop in each scenario. Companies’ Water Resource Management Plans assume that consumption per capital will remain roughly constant over the next thirty years. This assumption on water efficiency is therefore equivalent to the active part of the market continuing current trends in water efficiency, which appears a plausible assumption.

⁴⁷ Based on per household consumption submitted by companies (for England and Wales) in PR14.

⁴⁸ This estimation assumes that metered customers are no more likely to be active than inactive. This may also be a conservative assumption, on the basis that in practice metered customers are perhaps more likely to be active than non-metered customers, many of them having already engaged with their water supply to choose metering.

The value of potential water efficiency savings

Monetising water efficiency savings requires an estimate the cost of producing providing additional water resources. However, there is currently no standardised approach for this in the water sector in England. NERA found inconsistent approaches to estimating the cost in a survey of concepts applied in the water industry in England and Wales and in Australia⁴⁹. The report highlights the inconsistent approaches for estimating the underlying long-run marginal cost and the limited evidence available. In particular it highlights the ‘lumpy’ (high cost, low frequency) nature of capex spending on water resources. Further, estimating the value of water efficiency savings is challenging because of large variation in development costs across England and Wales. We reported recently⁵⁰ that water development costs vary by more than £200/MI between the highest and lowest cost of the next-cheapest scheme in each area.

This analysis has not attempted to calculate estimates of the value of water. Instead, it uses an existing (simple) estimate also used for the non-household impact assessment, which was based on information provided in the Walker Review⁵¹ of £400/MI. Other estimates quoted by NERA⁵² indicate a value of around AU\$2,000/MI. However, this comparison is distorted by exchange rate movements and significantly different local demand and supply conditions that determine the value in Australia, so this estimate is not likely to be a good proxy for the value in England and Wales.

Given uncertainty around the potential value of savings, this analysis compared overall savings implied by these assumptions with our own estimates of the benefits of wholesale competition as part of our Water 2020 programme. We identified the present value of companies’ future spending plans on water resources at £2.5bn from 2020/21 to 2049/50⁵³. These plans reflect the current regulatory framework and a limited role for market mechanisms. This work also identified that significant differences in prevailing levels of costs between and within companies may provide an indication of potential unrealised gains that markets could unlock. This work also

⁴⁹ In particular, regulators take varying approaches to estimating the value of water and no consensus was observed as to whether to use an average incremental cost or long-run marginal cost methodology Nera (2014) – [‘Incorporating Marginal Costs in Water Supply Tariffs: Prospects for Change’](#)

⁵⁰ Ofwat, (December 2015a), Water 2020 Regulatory framework for wholesale markets and the 2019 price review, [Appendix 2 – Water resources – supporting evidence and design options](#).

⁵¹ The Walker Review reported that the long-run marginal cost of water is between £160/MI to £660/MI, para 7.3.5 pp 75, Anna Walker, (2009), [The Independent Review of Charging for Household Water and Sewerage Services](#),

⁵² Op cit.

⁵³ Ofwat (May 2016), Water2020: our regulatory approach for water and wastewater services in England and Wales – [Appendix 3 Tackling water scarcity – further evidence and analysis](#) pp. 40

identifies evidence that wholesale markets could deliver significant efficiency gains, such as Ofwat (2011)⁵⁴ and Frontier Economics (2015)⁵⁵. Our 2016 analysis estimated the present value of efficiency gains in investment in new water resources at £125-250m for England, based on 5-10% improvements in the efficiency of investment in new resources only⁵⁶. Our analysis also estimated the present value of efficiency gains from existing water resources at £75-226m, based on a total efficiency saving of 1-3%.

In total the potential value of water efficiency savings from Water 2020 reforms amounts to a present value of between £200-476m. By comparison, the estimated present value of potential water efficiency improvements from residential retail competition is £0-389m, depending on scenario.⁵⁷ This illustrates that Scenario 1 assumes that water efficiency benefits from residential retail competition are similar to those estimated for the introduction of Water 2020 reforms (in addition to the Water 2020 reforms, which are incorporated in the counterfactual).

Resilience and environmental benefits

Lower water consumption could reduce the additional expenditure on resilience measures in the sector, or provide greater water and wastewater resilience for any given level of expenditure. Resilience arises from the ability of the water supply to deal with unusual or extreme demand-supply events and the wastewater system to deal with extreme weather events.

The resilience of water supply and the wastewater system faces long-term pressures from population growth, development and climate change, which may increase the frequency with which extreme scenarios are encountered. Residential retail competition could offer benefits in terms of both these areas of benefit, if retailers reduce households' water demand and demand on the wastewater system. Particularly if these reductions can be targeted specifically at times of system stress, through innovations to retailers' service offerings. We have already recognised that (currently integrated) suppliers have opportunities to innovate in their engagement

⁵⁴ Ofwat, (2015b), [A study on potential benefits of upstream markets in the water sector in England and Wales](#),

⁵⁵ Frontier Economics and South East Water (July 2015), [Water 2020 – water resource planning and third-party options](#)

⁵⁶ Ofwat (2015b), Table 5 pp. 44.

⁵⁷ These values are not directly comparable, because estimates in this analysis are in 2012-13 prices and estimates in Ofwat's Water 2020 analysis are in 2015/16 prices.

with customers, solutions to long-term challenges and evaluate alternatives to traditional engineering approaches⁵⁸.

However, measuring resilience (and measuring its value) is challenging. We consulted recently on how resilience should be measured⁵⁹. Stakeholders offered a range of alternative measures, including National Adaptation Programme indicators developed by the Adaptation Sub-Committee; companies' performance commitments and outcome delivery incentives; company risk registers; stress testing; and an independent review of the sector's resilience that could be updated periodically. Most importantly, stakeholders recognised that measurement of resilience should not necessarily be standardised, as the term encapsulates many different determining factors, which can vary considerably across locations. Nonetheless, we have stated that companies should develop better measures of resilience for PR19 and beyond.

With respect to environmental benefits, Walker noted that the estimated value of water provided in the Walker Review "took account of capital expenditure costs, but not the potential harm from over-abstraction and the alternative uses of water"⁶⁰. Reflecting this, the quantitative estimates in this analysis do not take into account further potential benefits of reduced water consumption, including environmental benefits and the benefits of increased resilience (both in water supply and wastewater services).

In light of these challenges, this assessment has not attempted to quantify the impact of residential retail competition on water nor wastewater resilience, nor environmental benefits associated with lower water use. Nonetheless, it should be noted that the estimated value of water efficiency improvements exclude potentially significant improvements to in both areas.

Effects of bundling

Following the introduction of competition in the residential retail market, there may be scope for companies to offer multi-utility bundles to customers. This could provide cost savings for companies by reducing their costs of engaging customers. It could also provide savings for customers by reducing the amount of time that they spend engaging with the market.

⁵⁸ Ofwat, (December 2015c), 'Towards resilience: how we will embed resilience in our work'

⁵⁹ Op cit.

⁶⁰ Walker (2009), para 6.3.5 pp 75

In previous analysis (Cave and government's analysis of business retail competition), possible discounts from 'bundling efficiencies' have been specifically quantified. This approach recognises that bundling efficiencies would lead to savings over and above the sector-specific estimates of potential productivity improvements that support estimates of efficiencies in the supply chain. In the business sector this rationale is supported by the scope for multi-site bundling, where business customers with many sites could save costs by bundling billing for multiple sites. This particular potential effect of retail competition is not relevant for the residential market.

This analysis wraps bundling into overall efficiency savings applied throughout the value chain. In particular, Scenarios 1, 2 & 3 accommodates scope for multi-utility bundling in its estimates of greater efficiency savings in retail activities (although Scenario 1 assumes greater efficiency, implying more probably and widespread multi-utility offerings).

Additional savings to bad debt costs

Savings to bad debt costs are also considered in this analysis, over and above the general efficiencies applied to the residential retail value chain. The introduction of residential retail competition could lead to increased incentives on companies to lower their bad debt costs. Companies facing competitive rivalry would have new incentives to lower their bad debt costs, in order to either increase their margins or offer more competitive offerings to residential retail customers. In particular, this is because bad debt costs in water are a very large share of total retail costs, compared with other sectors.

£2.2bn of residential water revenue was outstanding in 2014⁶¹, compared with around £475m in gas and £480m in electricity, despite average bills generally being two to three times higher than water across both fuels. Bad debt costs in the residential energy market have generally been less than 2% of earnings in recent years⁶², which would roughly equate to around 27% of retail costs in water⁶³. To provide further comparison, local authorities collected 98.1% of 2014-15 council tax debt within the year⁶⁴. The total value of outstanding council tax stood at £2.7bn in July 2015, including arrears potentially stretching back to 1993. This figure is roughly

⁶¹ Ofwat (December 2016c), [Affordability and Debt 2014-15](#)

⁶² CMA (2016), [Energy Market Investigation Final Report, Appendix 9.13 Retail Profit Margins](#), Figure 7 pp. 26

⁶³ This rough approximation assumes that if bad debt costs in the water market were 2% of revenues (wholesale and retail), total bad debt costs would account for 27% of allowed retail revenue.

⁶⁴ Department for Communities and Local Government (July 2015), [Collection rates and receipts of council tax and non-domestic rates in England 2014/15](#)

the same as in water, despite annual revenue from council tax being significantly higher at £22.9bn for 2014/15.

One argument sometimes put forward for high bad debt costs in the water sector is that residential retail customers cannot be disconnected. Though there is still a threat of disconnection for residential energy customers, in practice this risk is very slight (in 2014 a total of 233 customers were disconnected (192 electricity customers and 41 gas customers)⁶⁵. Disconnection rules therefore do not appear to explain the difference in relative levels (and cost) of bad debt between the two sectors. It appears more plausible that the level of bad debt is explained by water companies' poor information on individual customers, because they bill properties. Competition would require that companies obtain information identifying their customers, so that switching can occur.

No specific quantitative estimates of the potential effect of competition on bad debt costs have been found to date. In the absence of specific information, this analysis seeks to quantify the effect of reduction in bad debt at a plausible rate in comparison with other sectors, as illustrated above. The 'future water as energy past' scenario illustrates the potential effect of bad debt costs decreasing by 1% per annum over and above efficiency assumptions applied to the rest of the retail cost base. This assumption, combined with generalised efficiency savings, leads to a total reduction in bad debt costs of 22% by the end of the modelling period (over and above general efficiency savings). This still assumes that bad debt in the water sector remains well above level in energy market. 'Low' and 'high' sensitivities have also been created (0% and 2% respectively) and applied in alternative scenarios.

While this analysis of residential retail competition assumes that policy in that regard would remain as today, it seeks to illustrate the scale of benefit that could be achieved if bad debt costs could be lowered in addition to generalised savings. This captures the opportunity associated with a scenario in which bad debt costs can be significantly reduced. As with other assumptions, market design and policy will be very important in determining whether these potential savings could be realised.

Additional savings to metering costs

Metering costs incurred by retailers are those associated with meter operation activities, such as reading meters and managing customer data. The costs associated with meter ownership are not included, as in this analysis retailers are assumed not to own the meters.

⁶⁵ Ofgem (September 2015), [Consumer vulnerability strategy progress report](#),

We considered whether residential retail competition has the potential to lower metering costs, over and above general efficiencies applied across retail activities. Competitive retailers would be likely to roll out smart technology where it has value; an area with fast-paced technological development. Retailers can put pressure on incumbent meter services, for example as per current arrangements in business retail, which could put downward pressure on metering costs. In the absence of specific evidence, however, savings on top of efficiencies already assumed appear speculative, so are set at a low end of zero, with a ‘high’ saving of 1%, applied only in Scenario 1.

Estimating costs from introducing retail competition

This analysis also estimates the potential costs of implementing residential retail competition. Costs have been quantified where possible, on the basis of existing evidence of implementation costs for business retail competition and in other sectors.

At this early stage, no specific estimates of implementation costs for opening the residential retail market to competition have been provided by stakeholders. This analysis therefore seeks to use existing information to generate reasonable estimates, which can be updated with residential-specific evidence as it becomes available. Should residential retail competition be progressed further, these estimates would therefore need to be refined based on submissions from the relevant parties that would incur costs, including further detailed consideration of the costs resulting cost of regulatory monitoring and policy making.

This analysis considers the following costs:

- regulatory costs, which would be incurred by us;
- market operator costs;
- government costs;
- company costs; and
- customer costs.

For each category, **set-up costs** and **ongoing costs** have been considered⁶⁶. All costs were estimated on a market-wide, aggregate level, similarly to the estimated benefits from introducing retail competition. Individual companies’ costs may vary, but average efficient cost for existing companies and potential new entrants should be considered, as this cost-benefit assessment examines aggregate effects across

⁶⁶ Set-up costs are those which occur only once (e.g. an investment in new systems), ongoing costs are recurring (e.g. running those new systems).

the market. For this reason, and to match the aggregate level at which benefits were considered, this analysis did not seek to estimate individual companies' costs.

As with the treatment of estimated benefits, to address the uncertainty around costs, ranges have been created around central estimates for each category of benefits. Sensitivity analysis has been conducted within these ranges, as summarised above. In the absence of additional evidence on likely implementation costs, the range applied in the low and high cases has been set to a value that appeared plausible on the basis of the evidence available. While this analysis does use the best available evidence, it recognises that evidence in some areas is not as reliable as we would wish for.

Regulatory costs

Regulatory costs associated with setting up the market would include costs of work to design and implement market arrangements required to introduce competition. This would include development of codes, licences, contracts and other market architecture. It would also include additional analysis to identify and set specific regulatory policy and market design that would be implemented through that new regulation.

Set-up costs were estimated with reference to our latest budget update for implementing business competition in England⁶⁷. This is more up-to-date than evidence available from the set-up costs of implementing business competition in Scotland and the assumptions made in the Cave review. Our total costs of setting up the business market are now anticipated to be £5.6m (over three years from 2014/15 to 2016/17, when competition will be introduced (in 2013/13 prices)). Our costs for a similar work programme to implement residential retail competition would depend on how competition was implemented and on decisions about the market design. On one hand, opening the residential market would require policy questions specific to the residential market to be examined. On the other hand, it would be reasonable to assume that some of the tasks associated with market opening could be implemented more efficiently, if tasks carried out for business market opening need not be repeated for potential residential market opening (for example, if some of the same market architecture could be used or replicated for residential competition).

It appears a reasonable central estimate of regulatory set-up costs would be approximately equivalent to the £5.6m it is anticipated to cost to set-up the business retail market for opening. This value is therefore taken as the central estimate of

⁶⁷ Ofwat, June 2015, [Revised budget for implementing the new water and wastewater retail services market in England – the Open Water programme](#)

one-off costs. These costs are estimated to be incurred evenly over the time period that it takes to introduce competition.

Ongoing costs of implementing competition would include monitoring and regulating residential retail competition.

These costs are estimated in reference to two sources. First, we have estimated ongoing regulatory costs of £1.2m for our Water 2020 programme of work, monitoring and regulating wholesale competition, based on us implementing information remedies requiring companies to make information available on their websites⁶⁸. Second, the Cave review estimated an ongoing cost to us of £2.4m (in 2015-16 prices) for ongoing governance of water and wastewater markets, based on implementing and monitoring two sets of licences, for wholesale water and sewerage licences.

Introducing retail competition for households would require only one set of licences. Nonetheless, residential retail competition potentially involves greater monitoring and complexity compared with wholesale markets, in particular due to the need to monitor customer outcomes. Therefore, this analysis assumes that our ongoing monitoring costs will amount to £2.4m per year in 2015/16 prices⁶⁹, double our estimate of ongoing costs associated with Water 2020 work.

Market operator costs

Set-up costs comprise the costs of a programme to implement the necessary systems required for market operation. For the introduction of business retail competition, these were borne initially by Open Water Markets Limited (OWML). As of June 2015, these costs were estimated to be £6.4m over the three years from 2014/15 to 2016/17 (in 2013/14 prices)⁷⁰.

In addition to the costs of OWML's initial set-up work, additional costs beyond those initial set-up costs are being incurred by Market Operator Services Limited (MOSL), which is responsible for delivering the IT systems that will enable registration, customer switching and settlement between wholesalers and retailers. MOSL's anticipated set-up costs are £26.2m over the 3 years to 2016/17.

⁶⁸ Ofwat (May 2016), Water2020: Regulatory Framework for wholesale markets and 2019 price review [Appendix 6 Our approach to assessing impacts and Ofwat's regulatory costs](#)

⁶⁹ Ofwat, (June 2015), [Revised budget for implementing the new water and wastewater retail services market in England – the Open Water programme](#).

⁷⁰ Op. cit.

Similarly to our set-up costs, costs for residential retail competition would likely differ according to the different nature of challenges associated with implementing retail competition. However, a market operator would potentially have to deal with a significantly greater amount of data and scale its systems accordingly. The effect of such scaling on set-up and ongoing costs is unknown in the absence of any specific information on this. Therefore, we have made a starting assumption for set-up costs of approximately two times the costs for business market opening, at £60m, with low and high sensitivities of +/-25%.

We estimated in 2015 that **ongoing costs** will be £5.6m per year for the business retail market opening. Some of the ongoing costs associated with market operation may be lower for the residential retail market than for the business market. However, it should also be recognised that systems need to be in place to deal with larger numbers of connected customers and this could increase costs. In these initial findings, ongoing costs from the residential retail market are assumed to be £5.6m per year in our central estimate, with a low and high sensitivities of +/-25%.

Government costs

Government's incremental costs for residential retail competition are assumed to be zero. This assumption is made on the basis that the government policy making necessary to introduce and maintain residential retail competition would be carried out within existing budgets and resource boundaries.

Company costs

This section considers the following types of company costs:

- operational costs (customer acquisition, interaction with market operators)
- customer acquisition costs;
- separation costs; and
- financing costs.

The estimates in this section are principally based on known costs for business retail market opening. In comparison, some aspects of introducing competition could cost more for the residential market overall, while others could cost less. The underlying information on which assumptions for this analysis is based is not specific to the potential introduction of residential retail competition. These estimates would benefit from being updated with further data specific to the residential market where this can

be made available in future. We would therefore welcome stakeholder submissions in this area.

Nonetheless, it will be vital that such submissions specifically identify costs that are directly attributable to the introduction of residential retail competition and which are reasonably and efficiently incurred. For example, while systems upgrades to interact with a central market operator would be attributable to residential retail competition, costs associated with improving data-management or customer services capabilities would not. The latter costs would arise as a commercial decision taken by a retailer and should not be attributed to any policy decision on retail competition.

Operational costs

Following the introduction of residential retail competition, companies may incur an additional cost associated with acquiring and retaining customers. Incumbent companies would incur the following costs from residential market opening:

- a company-specific share of market operator costs; and
- company-specific market opening costs.

In this analysis, **company-specific share of market operator costs** are considered within 'market operator' costs above. This section examines **company-specific market opening costs**.

This analysis of potential residential retail competition uses the latest available information from our Retail Market Opening programme to estimate companies' costs. Incumbent companies would incur costs in preparing for market opening and operating under new market arrangements. Costs would vary across companies due to scale and differences in existing capabilities, however the categories of costs across all companies could include the following:

- reviewing proposed codes and understanding the impact they would have on internal processes and IT systems;
- preparing data and upgrading IT systems ahead of the market 'go-live' date;
- developing and implementing new processes and any organisational changes needed to satisfy market and operational code requirements;
- undertaking the necessary testing and trialling of market facing systems and processes to ensure that the new systems are working properly ahead of the 'go-live' date; and
- staff training and communication.

All incumbent companies choosing not to exit the retail market before market opening might incur some or all of these costs. Companies choosing to exit the retail market would also incur some proportion of such costs in preparation for exit.

As part of the PR14 process, we have received submissions from one company that estimated its market opening costs (which for business retail market opening are being incurred mainly in its wholesale business). For the purposes of this analysis we have assumed that these costs are reasonable. Scaling them up to apply to all companies results in an estimate of around £100m of set-up costs and around £27.5m per year of ongoing costs (using allowed revenue as the scaling factor). However, the company that submitted this information recognised that these cost estimates were uncertain; significant variations are likely across companies so the lack of information from other company's introduces uncertainty; and costs should only be allowed where they are efficiently occurred and further detailed interrogation would be required to identify whether this is the case for the data on which this estimate is based. We received a further submission on implementation costs for business customer retailers immediately prior to publication of this report, but its timing meant that it could not be considered in this initial findings document.

One additional concern with these estimates is that they relate to the business market, where customer numbers are significantly smaller (around 1.25million business customers compared with around 21.9m connected households). Company's operational costs from coordinating with the market operator are likely to be significantly higher than for the business market. Pro-rating these costs according to the number of residential customers versus business customers would lead to significantly larger cost estimates for the business market.

However, several other factors not incorporated into that estimate also need to be considered:

- a significant share of IT systems cost are fixed, suggesting that significant economies of scale should flow through to implementation of the business retail market. This may be combined with economies of scale realised through companies' experience from business market opening. Any retail exit and consequent mergers would deliver further economies of scale⁷¹;
- many of the activities above would not need to be scaled up from business market opening were the residential market to be opened, therefore costs should not be scaled up according to the number of customers. Examples include dealing with market codes, which arguably may take less effort, rather than more, following experience from business market opening; and

⁷¹ For example, [Severn Trent and United Utilities deciding to merge their retail functions for when the business market opens in 2017](#).

- new entrants without legacy systems may be able to enter and implement IT at significantly lower cost than current incumbents. Arguably, this assessment should not incorporate any costs over and above the potential new entrant system cost in this analysis – as such expenditure would be over and above the amount that would be efficiently occurred (however that is not the approach taken in making these estimates).

Taking all these factors into consideration this analysis assumes that up-front costs for residential retail market opening are higher than for business market opening, by a factor of two in the 'low' costs estimate and a factor of four in the 'high' costs assumption. Ongoing costs are assumed to be 10% of up-front costs in each case. This gives assumptions of £200m of up-front costs and £20m of ongoing costs for as a low estimate of company implementation costs and £400m of up-front costs and £40m of ongoing costs as a high estimate.

At this initial findings stage no specific information on companies' expected residential market opening costs has been made available. Therefore we would welcome further information to inform updates of these estimates, including relating to activities that drive these costs, cost estimates and justifications as to how these costs relate to other marketing opening costs and how they would be directly and necessarily linked to potential residential market opening.

Customer acquisition costs

In a competitive market, companies also incur costs associated with acquiring customers from their competitors. The costs of systems and processes required to perform the necessary processes and interactions with the market operator to switch a customer are considered above. This section considers only those costs that companies incur **over and above** those outlined above. That could include marketing, advertising or commission payments to third-party intermediaries.

The efficient level of acquisition cost is highly dependent on many aspects of market design, market structure, interaction with third party intermediaries and other factors. Setting assumptions about the cost of customer acquisition is highly challenging. Costs that reflect individual companies' commercial strategies and therefore contribute to an expected commercial payoff should not generally be treated as a 'cost' (because this would count only the cost, not the consequent benefit).

Comparisons with other utilities may not be relevant, given differences in the service provided and its value. For example, telecoms retailers may be willing to spend a greater amount on acquiring a customer because the associated revenue gain is

higher than retail water and wastewater services. Furthermore, the amount that retailers would be willing to spend to acquire a customer would also vary according to the period for which they could expect to retain that customer. The longer that expected period (and the lower overall switching levels), the more retailers may be prepared to spend. Perhaps the most relevant comparison with other sectors is the expected retention period for active customers, set out below.

The Cave Review assumed that companies would not invest any more in acquiring or retaining customers than the contribution they make to the firm's profit. This cost was assumed to be equivalent to 5% of the retail cost base. The government's business impact assessment followed Cave's approach, stating the contestable cost base at £56m and assuming per annum acquisition and retention costs would be equal to 5% of the retail cost base.

In the energy market, the six largest suppliers all advertise prominently on television. However, there are also plenty of mid-tier companies who spend relatively little on marketing and advertising, such as Extra Energy. This may partly be due to the large amount spent on advertising by price comparison websites through which they acquire customers⁷². However, no evidence has been found on total marketing spend. Further, some element of this market spend should be considered as discretionary and therefore not directly attributable to competition. This rationale supports the approach taken by Cave and the business impact assessment that does not count market spend over and above a certain portion of the retail cost base, equivalent to a notional profit margin.

For this analysis costs have been assumed to be equal to a rough estimate of profit that could be derived from a customer's acquisition. This itself is derived from the implied retention rate for customers in the active share of the market under each scenario. For example, in scenario 1, switching rates are assumed to be 5%, with 15% of the market being active. Therefore, each customer gained is assumed to be retained for 3 years. Assuming that a retailer may make around £5 profit from a retail customer each year, retailers' willingness to pay to acquire a customer would be no more than £15.⁷³ This implies a conservative estimate of costs, because in reality companies may be willing to pay less than 100% of the expected profit from acquiring a customer. This method is applied to each of the scenarios, explained by

⁷² The four biggest price comparison sites - Compare the Market, MoneySupermarket, Go Compare and Confused.com - spent £110 million on advertising last year, according to [research by Nielsen for This is Money](#).

⁷³ This value has been derived from applying the current 1% retail margin that retailers can make on retail costs, to estimate a generalised and rough profit per customer per year in retail. If the retail margin is higher, this acquisition cost would represent a lower proportion of expected profit from the customer.

the table below. The implied value of a customer is set equal to the profit earned within the implied retention period for customers in the active share of the market.

Table 5: Switching assumptions in each scenario

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Switching rate	5%	10%	10%	30%
Active portion of the market	15%	30%	30%	50%
Implied retention period	3 years	3 years	3 years	1 year, 8 months
Implied value of an acquired customer	Circa £15	Circa £15	Circa £15	Circa £8.30

Separation costs

The cost incurred by an incumbent to legally separate its wholesale and retail functions are assumed to be voluntary in our model. However, since these costs would be initiated by the decision to introduce competition to the residential retail market, it is appropriate they are included in our analysis.

Up-front and ongoing separation costs are linked to the development profile of competition, because some companies may choose to separate before others. In order for incumbents to separate and compete as retailers, they would need to have good databases that are capable of dealing with a large and frequently changing customer base. Billing systems would also need to be updated in order to be compatible with the market operator. It is difficult to reliably identify the size of these costs and the extent to which costs are caused by competition. Therefore, we have decided that these costs are wrapped up in the separation costs assumption.

In assessing the separation costs companies would face following the introduction of competition, Cave based estimates on evidence from the experience of introducing competition to the business water retail market in Scotland. This involved a top down assessment that calculated the cost of separation by reference to the costs that were incurred when Business Stream was separated from Scottish Water. The analysis in Cave assumed an overall one-off cost of separation of £137m across the sector.

The Non-Household Impact Assessment approached separation costs in more detail than the Cave Review. The impact assessment outlines that separation costs would vary between companies, as some had already outsourced/legally separated retail functions. Depending on the size of the water company (Water and Sewerage Company, large Water only Company, small Water only Company) and the degree

of separation that has already happened (in-house, outsourced, legally separate), the Non-Household Impact Assessment assumes different set-up and ongoing costs.

It is also worth bearing in mind the potential for retail consolidation, through mergers and acquisitions. This occurred to a large extent in the energy market following the introduction of retail competition. In water, we have already seen the example of Severn Trent and United Utilities deciding to merge their retail functions for when the business market opens in 2017.

Updating the approach taken in the Non-Household Impact Assessment, this analysis takes the portion of 'separation costs' estimated to be attributable to market opening for the business market and identifies the remainder as the pure costs of separation.

Nevertheless, these estimates can be compared to the total company costs (described as separation costs), that were included in the government's Non-Household Impact Assessment. This amounted to a total of £180m of up-front costs and £33m per year of ongoing costs.

As we outlined above, current information suggests that companies' implementation costs for the business market may be around £100m up-front and £27.5m ongoing. The government's Non-Household Impact Assessment included the operational costs included in our category above in its estimate of the overall 'company costs', which were broadly labelled as separation costs. This would imply that the remaining costs specifically attributable to separation would be £80m of set-up costs and £5.5m per year of ongoing costs (previously estimated total company cost minus company costs estimated here). These up-front and ongoing costs are assumed to be incurred according to the assumed profile of company separation (which is the same as the assumed profile of the development of competition under each scenario).

This evidence is the best currently available, but we would welcome further specific evidence on the potential separation costs that would be associated with the introduction of residential retail competition.

These do not take into account companies' learning from previous separation of business retail, nor any economies of scale or scope in separating residential retail. Nor do they allow for separations of residential retail businesses that may have occurred otherwise (in the counterfactual). These factors may be reasons to believe that separation costs could be lower. However, these estimates are based on evidence that is not as strong as we would wish for, so further evidence would help to improve the accuracy of these estimates.

However residential retailers serve a larger number of customers than business retailers. The needs of residential customers are also different from business customers, and this may be reflected in differences in operations. These factors may affect the likelihood of separation and the eventual cost of any separation. It has not been possible to take these factors into account in these initial estimates in the absence of specific information on separating residential retailers.

To recognise this, we include a low sensitivity with 25% lower than the above values. Similarly a high sensitivity with 25% higher costs is also included, given the uncertainty around these cost estimates.

Financing costs

We considered including the potential impact on how well companies can finance themselves in our quantitative analysis. In the Cave review, potential impacts on financing costs from competition are described. In the short term, transitional costs may be incurred, including breaching debt covenants or necessary de-gearing. In the longer term, investors may demand higher cost of capital to compensate them for any perception of increased risk associated with opening the retail market to competition.

However, after engagement with stakeholders Cave decided not to include financing costs in his analysis. This was based on three reasons. First, introduced appropriately, retail separation is unlikely to incur such costs. Second, the share of regulatory capital value discount in retail is very small. The third reason, which does not apply here, was that retailing functions relating to domestic customers account for the bulk of retail costs will remain a monopoly. Experience in the water sector at the time also suggested that financing costs would not be a significant factor in the costs of introducing retail competition. For example, Cave referenced that for Wessex Water (where separation was voluntary) separation did not have a significant cost implication.

It is not clear that residential retail competition would lead to an increase in overall risk within the sector; rather it could simply represent a transfer of risk between different parties. Therefore this analysis assumes that no new risk is introduced as a result, so no additional costs associated with an overall increase in financing costs has been included in this analysis. We do recognise the importance of market design to this question, where credit terms between wholesalers and retailers will be an important determinant of whether any additional financing costs are incurred.

Customer costs

Customers also incur costs associated with competition, specifically those associated with choosing their supplier (search and information finding, as well as costs involved in switching). This is analogous to the increased cost of customer engagement that would be incurred by companies.

The Financial Conduct Authority identified that in general insurance markets customers spend an average of around 15 minutes engaging with their insurance supplier at the end of a fixed-term contract, and this time was valued at approximately £14 per hour⁷⁴. General insurance markets are significantly more complex than a water contract could be expected to be on market opening. General insurance quotes require customers to provide significant levels of information in order to receive a personalised quote. Nonetheless, the proxy for the value of customers' time can be transferred to this analysis.

This analysis assumed that in a 'central customer cost' assumption, customers spend fifteen minutes switching (or investigating whether to switch – for those that 'engage' but do not switch). A 'low' sensitivity applies an assumption of half that time and a 'high' sensitivity applies an assumption of half as much time again. This assumption is then multiplied by the £14 per hour proxy from the FCA's study on general insurance markets.

This analysis applies the estimated search cost to the proportion of consumers assumed to switch, plus one customer engaging in the market for each customer that switches, spending the same amount of time engaging as a switcher.

Summary of assumptions

The following table summarises the assumptions made in the counterfactual (without taking into account the marginal impact of competition).

Note that the scenarios we consider are different combinations of low, central and high assumptions, as discussed earlier in the document.

⁷⁴ Financial Conduct Authority (December 2015), [Increasing transparency and engagement at renewal in general insurance markets](#),

Table 6: Assumptions made in the counterfactual

Variable	Description	Approx. value	Comments
Wholesale costs	2015/16-2019/20: PR14 data	Data	From our final determinations
	2020/21-2044/45: Compound average growth rate calculated from trend in Defra Bill's model	Central: -0.66% p.a. High: 0.78% p.a.	Incorporates ongoing gains from regulation, business retail competition and wholesale reform
Total retail costs	2015/16-2019/20: PR14 data	Data	From our final determinations
	2020/21-2044/45: Compound average growth rate calculated from trend in Defra Bill's model	0.72% p.a.	Incorporates ongoing gains from regulation, business retail competition and wholesale reform
Proportion of metering costs that make up total retail costs	2015/16-2019/20: PR14 data	Data	Calculated by using proportions suggested in the company submissions at industry level
	2020/21-2044/45: Holds above proportion from 2019/20 in PR14 constant	17% of total retail costs	
Proportion of bad debt costs that make up retail costs	2015/16-2019/20: Holds above proportion from PR14 constant	Data	Calculated by using proportions suggested in the company submissions at industry level
	2020/21-2044/45: Holds above proportion from 2019/20 in PR14 constant	43% of total retail costs	
Customer numbers (metered and unmetered)	2015/16-2044/45: WRMP data*	Data	WRMP data goes up to 2040, then we continued the trend to 2045

Table 7: Assumptions on estimated benefits of introducing competition

Benefit	Description	Approx. value	Comments
Active share of the market	The share of total residential customers that are likely to receive the 'full' potential benefits of competition	Central: 30% Low: 15% High: 50%	

Benefit	Description	Approx. value	Comments
Retail efficiency savings – contestable portion of the market	Efficiency saving applied to the contestable portion of the retail market	One-off: Central: 8.13% Low: 3.75% High:15%	
		Ongoing (p.a.): Central: 1.22% Low: 0.75% High: 1.88%	
Retail efficiency savings – spill-over to the non-contestable portion of the market	50% of the efficiency saving that applies to the active portion of the residential retail market is assumed to spill-over to the inactive portion of the residential retail market	One-off: Central: 4.07% Low: 1.88% High: 7.5%	
		Ongoing (p.a.): Central: 0.61% Low: 0.38% High: 0.94%	
Spill-over efficiency savings to wholesale	One-off efficiency gains realised in the wholesale segment of the market realised through a spill-over from residential retail competition	One-off: Central: 0.5% Low: 0.25% High: 0.75%	
Water efficiency savings	Proportion of water consumption reduced, developed over the modelling period (2045)	Ongoing: Central: 10% Low: 0% High: 20%	Developed by the end of the modelling period
	Value used to convert the water efficiency saving into a monetary value	£400/ML	From the long run marginal cost in the Walker report that was used in the NHH IA
Bundling costs	No specific assumption	n/a	Overall efficiency savings from bundling are wrapped up in the total retail cost efficiency savings assumption
Additional saving to bad debt costs	Efficiency savings on bad debt costs additional to savings realised on overall retail costs	Ongoing (p.a.): Central: 1% Low: 0% High: 2%	
Additional saving to metering costs	Efficiency savings on metering costs additional to savings realised on overall retail costs	Ongoing (p.a.): Low: 0% High: 1%	Speculative assumption included as a sensitivity

Table 8: Assumptions on estimated costs of introducing competition

Cost	Description	Approx. value	Comments
Regulatory	Cost incurred by the regulator to set up and monitor a competitive residential retail market	Set-up: Central: £5.6m Low: £4.2m High: £7m	
		Ongoing: £2.4m p.a.	
Market operator	Cost incurred by the market operator to set up and maintain a competitive residential retail market	Set-up: Central: £60m Low: £45m High: £75m	
	-/+0.25% applied for low/high case	Ongoing: Central: £5.6m Low: £4m High: £6.6m	
Government	Government cost of setting up and overseeing the market	£0	Zero cost assumed, as resources would be spend on other areas and not seen as a priority to incorporate the opportunity cost into the model
Company: operational	Costs associated with getting ready for market opening	Set-up: Low: £200m High: £400m	
	Costs associated with operating under new market arrangements	Ongoing: Low: £20m (p.a.) High: £40m (p.a.)	
Company: customer acquisition	Costs associated with acquiring customers from their competitors and retaining current customers	Switching rate: Low: 5% Central: 10% High: 30%	
		Active portion of the market: Low: 15% Central: 30% High: 50%	
		Implied retention period: Low: 20 months High: 3 years	

Cost	Description	Approx. value	Comments
		Implied value of an acquired customer: Low: circa £8.30 High: circa £15	
Company: separation	The cost incurred by the incumbent to separate its wholesale and retail functions	Set-up: Central: £80m Low: £60m High: £100m	We assume separation would be voluntary and that, therefore, companies would not separate when competition is introduced
		Ongoing: Central: £5.5m p.a. Low: £4.1m p.a. High: £6.9m p.a.	
Company: financing	Not included in our analysis	n/a	
Customer	The costs associated with choosing their supplier (search and information finding, as well as costs involved in switching)	Switching rate: Low: 5% Central: 10% High: 30%	For every customer that engages and switches, we assume that another customer engages and does not switch
		Active portion of the market: Low: 15% Central: 30% High: 50%	
		Cost of engaging and switching (£/switch): Central: £3.50 Low: £1.80 High: £5.30	
		Cost of engaging but not switching (£/switch): Central: £3 Low: £1.50 High: £6	

Table 9: Summary of data used

Area	Year	Data source
Wholesale costs	2015-2020	PR14 Final Determinations
	2020-2045	Projection based on Defra's future bills model
Retail costs	2015-2020	PR14 Final Determinations
	2020-2045	Projection based on Defra's future bills model
	2015-2040	WRMPs

Area	Year	Data source
Water consumption, meter penetration, customer numbers	2040-2045	Trend based on data from the WRMPs
Inflation	2006-2016	ONS