Understanding future affordability pressures in essential services

Report

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About this document

This report is part of the UK Regulators Network (UKRN) project "Understanding affordability pressures across sectors", as set out in its 2015-16 work programme. It examines the contributory factors which may affect future bills and fares for essential services across the energy, water, communications and rail sectors.

About the UK Regulators Network

UKRN is a network formed by the UK's economic regulators:

- The Civil Aviation Authority (CAA)
- The Financial Conduct Authority (FCA), including the Payment Systems Regulator (PSR) [1]
- Office of Communications (Ofcom)
- Office of Gas and Electricity Markets (Ofgem)
- Water Services Regulation Authority (Ofwat)
- Office of Rail and Road (ORR)
- Northern Ireland Authority for Utility Regulation (Utility Regulator)

Monitor, the sector regulator for health, participates in the network and its projects as appropriate. The Water Industry Commission for Scotland (WICS) and Legal Services Board (LSB) are contributing members which generally participate in projects as observers.

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[1] Although it has competition and consumer protection functions, the FCA is not classed by HM Government as an economic regulator

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1. Summary

1.1. UKRN's first report on affordability demonstrated the increased pressure on household budgets that has occurred in recent years due to price rises for essential services in some sectors. This report examines the contributory factors which may affect future bills and fares for essential services across the energy, water, communications and rail sectors over the next ten years. As with any assessment of future trends, the outcomes are highly uncertain.

1.2. Real term increases in rail fares are expected to be limited over the next five years and over this period central forecasts for energy and water bills show a slight reduction. Over the longer term (to 2030) energy bills are expected to increase unless future energy efficiency measures help to significantly decrease consumption. Increasing use of new services may increase total communications bills, but should also help to drive down unit costs, meaning that bills for essential services do not increase.

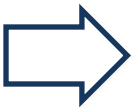
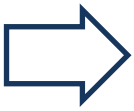
1.3. Our analysis shows that each sector has a unique combination of factors affecting future bills, reflecting different market structures and underlying factors determining future bills. A high-level comparison is shown in Figure 1.

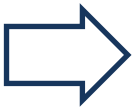
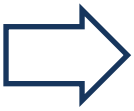
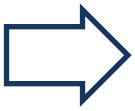
1.4. Given the capital-intensive nature of the sectors, infrastructure costs are obviously an important component of total industry costs. However, the scale of expected future investment, and therefore its potential impact on future bills, is different in each sector. Energy sector investment accounts for around 60% of UK's total infrastructure projects in the current National Infrastructure Plan pipeline. Crossrail and High Speed 2 (if approved) are important investment projects in rail and will become increasingly significant over the next few years. Estimated investment in the water sector is less significant but individual investment plans may have distributional effects. For example the Thames Tideway Tunnel, the single largest investment project in the sector since privatisation, will only impact customers of Thames Water in the south east of England. In the communications sector infrastructure costs do account for a significant proportion of capex, however it is difficult to accurately forecast capex and investment is unlikely to be recouped through the retail pricing of essential services.

1.5. This report suggests that in terms of the average consumer and based on central scenarios for bill outcomes, energy and water bills should account for a slightly lower proportion of real household incomes in 2020 compared to 2014. However, we know that there are certain groups of consumers that are likely to have greater affordability issues. Across all sectors this includes those on low incomes or with particularly high consumption needs. There are also some sector specific factors that may make consumers more at risk. In the energy sector those in older, private sector housing (especially the private rented sector), those in rural, older properties without mains gas supply, working-age families in larger, older, solid wall properties in urban areas and those living in electrically-heated flats may be most at risk. From a water perspective, areas with high levels of metering are more likely to have large families at risk of affordability problems, while areas with low metering are more likely to find affordability problems focussed on single occupant households paying relatively high unmetered bills.

1.6. Different market structures, and the role of regulators in them, mean that some regulators have a greater influence over future bills and fares than others. Nevertheless there are benefits from sharing lessons learnt across sectors. UKRN's future work in this area is considering the potential to develop a more coordinated approach among regulators to ensure that consumers who may be in vulnerable circumstances, due to non-financial as well as financial factors, can access help more easily.

Figure 1: Overview of the key factors influencing future bills and fares for essential services

	Energy	Water	Communications	Rail
Key cost inputs *(impacts are very hard to predict)*				
	Wholesale costs and cost of capital may increase over time although it is very hard to predict future movements in global markets.	In the short term bills are largely unaffected by cost inputs, and bills in England and Wales will fall by around 5% in real terms between 2015 and 2020. In the long term costs, and the cost of capital, may increase and put upwards pressure on bills.	Ofcom does not have detailed, publishable data on future capex spend, however investment is likely to focus more on new technology than essential services; higher efficiency of new technologies may reduce unit costs.	The regulation of certain rail fares by the government mean that they do not directly reflect changes in costs.
Regulatory intervention *(impacts are uncertain but generally can be predicted with more confidence)*				
	In GB, price control mechanisms ensure that investment is delivered at a fair price to consumers. Significant infrastructure investment is expected to increase the electricity transmission component of bills to 2021. The distribution network component is likely to reduce under the current price control. Regulatory changes at a European level should help to promote cross border efficiencies.	Ofwat price control allowed companies to offer bills which will fall by around 5% between 2015 and 2020 in England and Wales.	Highly targeted interventions are in place to ensure that a basic level of access to certain services is available to all.	Regulation by ORR has driven down day-to-day unit costs
Sector- related policy *(impacts are hard to predict)*				
	The cost of energy and climate change policies, including new infrastructure investment, is estimated to make up an increasing proportion of domestic bills in the future but energy efficiency delivered by policies should help to offset costs.	Environmental legislation raises bills nationally although the regional impact may vary.	Policy focuses on promoting competition whilst encouraging investment, although is generally focussed on newer technologies	Government policy on rail fares and decisions about government funding for the rail industry are a key component of consumer affordability.

	Energy	Water	Communications	Rail
Technological change *(impacts are hard to predict)*				
	Technological change is being driven by the transition to a lower-carbon energy system and more flexible 'smart' grids	Smart metering, and more efficient water and sewerage treatment, will reduce bills.	Technological innovation can put downward pressure on the price of essential services by providing competitive alternatives, although may place upward pressure on 'legacy' services still seen as essential.	Technological improvements will help passengers access the most appropriate fare for their journey. Network Rail is introducing new technology to improve efficiency of its business e.g. ORBIS programme.
Market competition and liberalisation *(impacts are hard to predict)*				
	Continued competitive pressure from new entrants will facilitate better outcomes for consumers. Greater European integration and further interconnection may also help to decrease future price pressure.	Retail market opening in 2017 should reduce non-household bills and could also reduce household bills as a spill-over effect.	Highly dependent on supplier strategies, about which Ofcom can speculate but with little certainty in a fast-paced market. Potential consolidation may impact on market dynamic.	While the scope for on-rail competition remains limited in most areas, fare competition has been a feature of some fast-growing routes.
Demand developments *(impacts are very hard to predict)*				
	Consumption is expected to continue to decline due to energy efficiency improvements.	Water efficiency devices, and customer behaviour, will reduce bills.	The nature of future demand for communications services is inherently uncertain but higher capacity data services are increasingly likely to be considered as 'essential'.	Passenger demand is predicted to continue to grow strongly, requiring new investment that puts upward pressure on total costs, albeit that there may be opportunities to accommodate some growth through better use of the current network.

Key:

Likely direction of impact *(arrow direction)*			
	Likely to push bills up	Broadly neutral impact	Likely to push bills down
Potential significance of impact *(arrow size)*			
	Small	Medium	Large

2. Future affordability of essential services

Introduction

2.1. This report examines the contributory factors which may affect future bills and fares for essential services across the energy, water, communications and rail sectors. It is part of a package of work on affordability being undertaken by the UK Regulators Network (UKRN): in January 2015, UKRN published an initial report[2] summarising the available evidence on affordability of current bills and what regulators do to help address affordability in these sectors. In addition to this current report, there is also ongoing work looking at how to better align regulators' approach to customers who may be in vulnerable circumstances, due to non-financial as well as financial issues.

2.2. Consumers experiencing affordability problems will often have difficulties in relation to more than one sector which is why it is important to consider the future movement of bills and fares across utilities[3]. But there are other reasons for undertaking a cross-sector analysis. If there are common pressures across different sectors then policy makers and regulators should be aware of these. In the future there may be greater interdependency between sectors, for example with the communications sector supporting the development of 'smarter' networks in other sectors through innovation in connectivity. This may mean that the factors influencing consumer bills become more aligned over time.

2.3. There is no formal common definition of affordability amongst the regulators participating in this work. However, for the purposes of this report, we have taken it to mean the ability of consumers to pay for a minimum level of a certain service. Understanding consumer affordability issues is complex because affordability depends on many factors which influence both the scale of bills and fares and changes in household income.

2.4. This report does not take a view on the level of bills and fares in terms of what might be reasonable for households to pay. Instead, it aims to provide a picture of the future trajectories of bills and fares, and the factors that are likely to influence these.

2.5. The main focus of this work is to examine how bills and fares may change in the future, looking at issues that will affect both the price of services and how consumers' demand for these services may evolve. This chapter takes a cross-sector view, bringing together the relevant evidence and comparing the key factors that might be driving changes in bills and fares. It also briefly examines how the changes may affect different types of consumers and looks at how household incomes might change in relation to bills and fares in the future. Chapters 3-6 discuss these issues in more detail on a sector-by-sector basis.

[2] UKRN Jan 2015 'Understanding affordability pressures in essential services' http://www.ukrn.org.uk/wp-content/uploads/2015/01/UKRN-Affordability-Report.pdf
[3] NAO Nov 2013 'Infrastructure investment: the impact on consumer bills' http://www.nao.org.uk/wp-content/uploads/2013/11/10286-001.Full-Report1.pdf

Our approach

2.6. Our work focuses on essential services. Essential services are not always easy to define: whilst energy and water are generally considered essential for health and well-being, there may still be a discretionary element of spending for some households. In this analysis we assume that all spending on energy and water is essential. There is an even greater variation in the extent to which services are seen as essential by consumers, particularly for participation in social and economic activities, in the communications and rail sectors. For the purpose of this report, in the communications sector essential services are defined as basic fixed-line broadband, basic fixed-line voice connections, basic mobile voice and data services and a second class postal service. Ofcom research has shown substantial variations between different demographic groups in terms of what services are considered essential and, given the dynamic nature of the communications market, services seen as essential today may not be considered essential in ten years' time. Similarly, services which are new-to-market today may become the essential services of the future as technology evolves. In the rail sector, regulated fares have been used for the basis of our analysis because these fares are deemed most in need of price protection.

2.7. The timeframe for our analysis is generally ten years, as looking beyond this timeframe introduces such a high level of uncertainty that it makes sector comparisons too difficult. However, given the diverse range of data sources that we have examined, inevitably the evidence does not always neatly align to this timeframe and therefore some of the underlying data presented relates to longer or shorter timeframes.

2.8. The coverage of the report is UK-wide. We have taken account of the differing jurisdictions for regulators in these sectors. Ofcom has responsibility for the communications sector across the UK. Ofwat has responsibility for the water sector in England and Wales, alongside WICS in Scotland and the Utility Regulator in Northern Ireland. Ofgem is responsible for the energy sector (gas and electricity) in Great Britain, with the Utility Regulator responsible for energy regulation in Northern Ireland.

2.9. The analysis of future bills and fares takes a broad look at the factors that might affect both prices and future demand for essential services. It assesses these factors under a number of common themes:

- key cost inputs
- regulatory intervention
- sector-related policy (including UK, EU and devolved administration policies)
- technological change
- market competition and liberalisation
- demand developments.

2.10. Given the capital-intensive nature of these sectors, infrastructure investment is an important factor that may cut across a number of these themes and is therefore highlighted within each chapter where relevant.

2.11. Most of the evidence about future bills and fares relates to average changes across each sector but in reality the outcome will be much more complex. Changes to bills and fares will vary depending on the

characteristics of different consumers. Bills and fares may vary depending on geography but also on how consumers are billed, the household structure and the type of house they live in, as well as their individual preferences. Where possible, we therefore try to highlight the relative impacts on different consumer groups.

2.12. Any assessment of the future direction of bills and fares is highly uncertain: consumer attitudes and behaviour may change in ways that we cannot predict; future government priorities may affect policy outcomes or the way in which policies are funded; there may be technological or business model innovations that we cannot foresee; we do not know how companies may choose to pass through regulatory and wider costs to their customers; and in some cases, bills may be shaped in part by wider global economic or political events. Such uncertainty impacts the factors underpinning bill and fare movements across all four sectors and the conclusions in this report should be read with this in mind.

2.13. The remainder of this chapter discusses the key cross-sector findings:

- Key findings on the direction of future bills and fares
- A cross-sector comparison of the underlying factors affecting bills and fares
- Relative impacts on different consumer groups
- How household incomes might change in relation to bills and fares in the future.

Box 1: Key findings from 'Understanding affordability pressures in essential services' (UKRN January 2015)

Analysis for UKRN's first report on affordability focussed on the past movement of bills in the telecommunications, energy and water sectors. This showed a different picture across the sectors. Prices for most communications services and, in certain regions, the water sector, declined in recent years (in real terms). But overall, energy prices, water prices generally and rail fares increased to varying degrees. The work showed that price rises in some sectors, set against the background of static real incomes, had recently resulted in increased pressures on household budgets, with consumers on low incomes and those in other vulnerable situations feeling the most impact.

Low-income households, lone parents or couples with dependent children, and working age adults living alone were found to be often at higher risk of experiencing affordability problems than other household types. Sector-specific factors also play a role. In the energy sector these include energy efficiency and housing characteristics (such as housing age and type and fuel used for heating). In the water sector, affordability pressures may be affected by whether a household's water use is metered, and the rateable value of a property, as well as water efficiency advice and devices.

The report showed that in some sectors affordability of essential services differs across geographical areas. While comparing data was difficult, regional differences in bills could be

Key findings on the direction of future bills and fares

2.14. UKRN's first report on affordability demonstrated the increased pressure on household budgets that has occurred in recent years due to price rises for essential services in some sectors (See Box 1). Looking forward, we expect that bills and fares across the four sectors will change as follows:

- **Energy**: analysis by the Department of Energy and Climate Change (DECC) suggests that bills will decrease by around 4% (in real terms) between 2014 and 2020, based on their central assumption about fossil fuel prices[4] and the original budget for the Levy Control Framework[5]. This reduction is consistent with estimates by the Committee on Climate Change (CCC). Looking out to 2030, CCC estimates a slight reduction in the average dual-fuel bill between 2013 and 2030, dependent on energy efficiency measures being successful. DECC's central scenario however, estimates an 11% increase in real terms between 2014 and 2030, which in part reflects that its analysis does not include any new energy efficiency policies or extensions to current energy efficiency policies beyond 2022 that may be required to meet the fourth Carbon Budget and beyond[6]. The analysis therefore shows that reducing energy consumption will be a key driver in determining energy bills over the longer term. A key uncertainty around the estimates is the prices of wholesale gas and electricity. The wholesale element currently makes up nearly 50% of domestic consumer bills[7]; these estimates of rising bills are underpinned by an assumption of increasing wholesale prices but this is highly uncertain.

- **Water**: bills in England and Wales are expected to be relatively flat over the next 10 years and decline slightly over the longer term. Capital investment will still be important to maintain current service demand, but the scope and scale of future enhancement expenditure (related to additional investment to meet new service demands) is uncertain. Greater efficiency within the sector and market reform is expected to help limit bill increases and dampen any effects of a future potential rise in the cost of capital if interest rates increase. In Scotland, where affordability in the water sector is addressed through Principles of Charging set by Scottish Ministers, bills are expected to continue to decline in real terms in both the short and longer term.

- **Communications**: competition and the dynamic nature of innovation are expected to continue to reduce unit costs for communications services, although there is a high level of uncertainty both about future use and supply costs due to the rapidly changing marketplace and technologies. An expanding market rather than higher prices for essential services is expected to fund continuing infrastructure investment. Risks that lower usage of basic 'legacy' services such as voice telephony may result in higher prices for those consumers using them are mitigated by current and potential future regulatory intervention. Ofcom has a range of available policy tools in taking account of the needs of particular vulnerable groups, and the interests of consumers in relation to choice, price, quality of service and value for money.

[4] DECC Nov 2014 'Estimated impacts of energy and climate change policies on energy prices and bills: 2014' https://www.gov.uk/government/publications/estimated-impacts-of-energy-and-climate-change-policies-on-energy-prices-and-bills-2014. CCC Dec 2014 'Energy prices and bills – impacts of meeting carbon budgets 2014' http://www.theccc.org.uk/publication/energy-prices-and-bills-impacts-of-meeting-carbon-budgets-2014/.
[5] See paragraph 3.41 for more detail
[6] http://www.theccc.org.uk/tackling-climate-change/reducing-carbon-emissions/carbon-budgets-and-targets/
[7] DECC Nov 2014 'Estimated impacts of energy and climate change policies on energy prices and bills' https://www.gov.uk/government/publications/estimated-impacts-of-energy-and-climate-change-policies-on-energy-prices-and-bills-2014

- **Rail**: regulated fares constitute around 45 per cent of total fares and are determined by government. The government has pledged to keep commuter rail fares frozen in real terms (as measured by RPI) over the current Parliament.

  Therefore, overall, real term increases in rail fares are expected to be limited over the next five years and over this period central forecasts for energy and water bills show a slight reduction. Over the longer term (to 2030) energy bills are expected to increase unless future energy efficiency measures help to significantly decrease consumption. Increasing use of new services may increase total communications bills, but should also help to drive down unit costs, meaning that bills for essential services do not increase.

Cross-sector comparison of the underlying factors affecting bills and fares

2.15. Our analysis shows that each sector has a unique combination of factors affecting future bills, reflecting the fact that both demand and supply characteristics are different across the sectors.

2.16. Figure 1 above and Table 1 below provide an overview of the key issues that are expected to influence future bills and fares for essential services. These draw on the current available evidence discussed in more detail in the subsequent chapters but, as summaries, they cannot capture all the relevant detail and uncertainty.

2.17. Looking across all four sectors, using the themes identified above, highlights the following issues:

- **Key cost inputs:** given the capital intensive nature of the sectors, the cost of capital is an important cost input. The cost of capital is fixed for a control period within the water and rail sectors and the cost of equity is fixed in the energy sector for the period of their current price controls. As interest rates are currently at a historic low, over the longer term they are expected to increase. Any effect would be limited by the fact that the investment costs are generally spread over the lifetime of the assets.

- **Regulatory intervention**: Differences in market structures, and the role of regulators in them, means that some regulators have a greater influence over future bills and fares than others. In England and Wales, the companies in the water sector are regional monopolies with the entire bill subject to a regulatory price control. Energy prices in Northern Ireland are also fully regulated. However, Ofgem's price controls for GB cover only the monopoly networks (transmission and distribution); network costs account for around 22% of an average dual-fuel bill[8]. Price control mechanisms affect consumer bills to an even smaller extent in the communications and rail sectors. Retail telecommunications services in the UK are not generally subject to price controls (although caps apply to certain types of call, whilst second class stamp prices for letters and packages up to 2kg are also subject to a safeguard cap). Office of Rail and Road's (ORR) oversight of Network Rail determines its level of spending and this is a key cost input to the train operating companies, but regulated fares are set by government.

- **Sector-related policy:** regulated rail fares are determined by government, both in terms of the average change (versus RPI) across the basket of fares offered by each train operating company and the 'flex' rules which permit them to vary their increases within their basket.

[8] https://www.ofgem.gov.uk/network-regulation-riio-model/energy-network-how-it-works-you (August 2014)

Energy bills will also continue to be influenced by government policy, with a number of policies that are directly funded through levies on consumer bills, including the policies under the Levy Control Framework, energy efficiency policies and the capacity market. By contrast, current government policies to extend the reach of essential communications services are funded by taxation and therefore are unlikely to affect consumer bills directly.

- **Technological change:** technological innovation is expected to continue at a rapid pace in the communications sector and help mitigate against the risks of higher consumer bills by lowering unit costs, however innovation may also cause the price of legacy services still seen as essential to rise although may also yield alternative products. New technologies such as smart meters will be rolled out across the domestic energy market in the next five years and will facilitate the development of smarter grids but the impact on bills over the next 10 years is highly uncertain. Technological innovations are likely to play a lesser role in the water and rail sectors over this time period although developments in information and communications technology may have greater effects in the future and there are some good examples of innovation in the water sector with universal and smart metering, and developments in water and sewerage treatment.

- **Competition/liberalisation:** in England and Wales, the Water Act 2014 enables market reform for non-household retail and in upstream (water resources and treatment) services, with the non-household retail market due to open in 2017 in England. Market reform is expected to drive wider industry efficiency savings that will reduce household bills by about 1% by 2025, with the majority of savings likely to come as the market matures over time. In energy, the number of competitors in the retail market has increased over the last few years, along with smaller suppliers' market share. Their ability to sustain growth and remain in the market over the longer term will determine the impact on competition and bills. Future competition in the retail energy market may be influenced by the outcome of the investigation by the Competition and Market Authority (CMA) and by greater European integration as well as consumers' willingness and ability to engage in the market. There is the prospect of consolidation in the telecoms markets which may affect levels of competition: mobile operator Three is seeking to acquire O2 UK (subject to regulatory approval) and the CMA is evaluating a proposed acquisition of EE by BT. Rail is at the heart of the European Union's transport policy and European influence is becoming ever more important for the future of Britain's railways to drive increased use of capacity in the Channel Tunnel, improve competition for services and maximise transparency of access charges.

- **Future demand:** Macroeconomic conditions may affect future demand, for example stronger economic growth would generally increase household demand. Consumer attitudes and behaviour will also be important factors influencing demand across all four sectors. In the energy and water sectors, acceptance of new metering and any associated behavioural change could help put downward pressure on household demand and bills and may change the relationship that consumers have with their utility suppliers but the scale of this effect is very hard to predict, especially in the energy sector. Changing working patterns e.g. increased working from home, may affect demand for some essential rail services. In the communications sector, the development and adoption of new services may make the markets for essential telecoms services more competitive, but also has the potential to reduce competitive focus on 'legacy' services which may be essential to some consumers (for example, fixed voice telephony).

Demographic changes may also affect future demand. For example, there is a trend for households towards having fewer occupants on average and so a flat water and sewerage bill would therefore mean a higher bill per person. Wider societal issues such as climate change may also affect demand for services, especially in the water and energy sectors.

2.18. Infrastructure investment cuts across a number of these themes. Given the capital-intensive nature of the sectors, infrastructure costs are obviously an important component of total industry costs. However, the scale of expected future investment, and therefore its potential impact on future bills, is different in each sector. Planned energy sector investment of around £275bn accounts for around 60% of the UK's total infrastructure projects in the current National Infrastructure Plan pipeline[9]. Crossrail and High Speed 2 (if approved) are important enhancement and investment projects in rail and will become increasingly significant over the next few years. Estimated investment in the water sector is less significant but individual investment projects may have distributional effects, for example the Thames Tideway Tunnel, the single largest investment project in the sector since privatisation, will only impact customers of Thames Water in the south east of England. In the communications sector infrastructure costs do account for a significant proportion of capex, however it is difficult to accurately forecast capex and investment is unlikely to be recouped through the retail pricing of essential services.

Relative impacts on different consumer groups

2.19. Different consumer groups face different affordability pressures in relation to the purchase of essential services. For example, different income groups spend different proportions on energy, water, communications and rail services[10]. Figure 2 shows that in 2013, the proportion of household expenditure on energy, water and communications services was greater for lower income households, with the difference being especially marked in relation to energy services. In contrast, the proportion of household expenditure on rail and tube fares was smaller for lower income households, possibly reflecting the more discretionary element of spending on rail and tube travel.

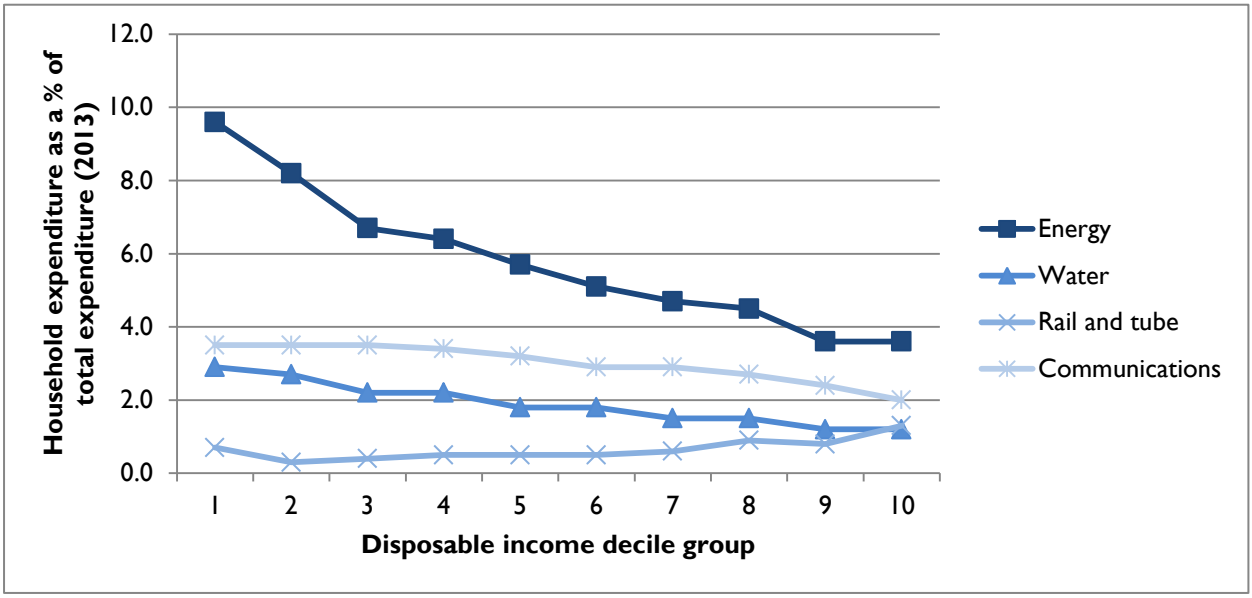
2.20. In the energy, communications and rail sectors, the ability and willingness of consumers to actively engage in these markets will affect which groups access the most competitive tariffs and fares and therefore manage their expenditure effectively. Evidence suggests that it is often consumers in vulnerable situations who are less likely to be engaged and therefore less likely to get the best deal[11].

[9] HMT Dec 2014 'National Infrastructure Pipeline' https://www.gov.uk/government/publications/national-infrastructure-pipeline-december-2014

[10] The categories of spend within the 'Family spending' survey are not completely consistent with the scope of the services discussed in the rest of the report, for example energy includes electricity, gas and other fuels; water includes water supply and 'miscellaneous services relating to the dwelling'; spending on tube fares as well as rail fares is included.

[11] For example, see Ofgem 2014 'Retail Market Review Baseline Survey https://www.ofgem.gov.uk/ofgem-publications/89113/ofgemrmrbaselinefinalpdf.pdf

Figure 2: Household expenditure on essential services as a percentage of total expenditure, by income decile



Source: ONS 2014 "Family spending' Table 3.2E

2.21. Most of the evidence we have on future bills and fares relates to the average user. In reality, changes will vary depending on many different household characteristics including not only the proportion of household income spent on essential services, but also other factors such as the heating fuel that the household uses, whether the household takes-up energy efficiency opportunities or installs new water metering and household travel patterns.

2.22. In the energy sector, fuel poverty is a significant issue, especially across the devolved administrations. The UKRN's first report on affordability showed that under the 10% definition[12], 30% of households in Wales, 39% of households in Scotland and 42% of households in Northern Ireland were fuel poor[13]. Low income and high-use households are vulnerable to fuel poverty. Other characteristics vary across countries within the UK but there are some common features across all countries which could help determine the focus of future intervention i.e. (i) older, private sector housing (especially the private rented sector), (ii) rural, older properties that do not have mains gas supply (a particular issue in Northern Ireland where 75% of households are not connected to the natural gas supply), (iii) working-age families in larger, older, solid wall properties in urban areas (iv) electrically-heated flats[14].

2.23. Targeting energy efficiency measures on those in greatest need has the potential to decrease fuel poverty whilst meeting the fourth carbon budget[15]. Key to the success of this is the ability to identify and target fuel poor households and ensure that they take up appropriate energy efficiency measures.

[12] The 10% definition of fuel poverty defines a household as fuel poor if it is spending more than 10% of its income on fuel to achieve adequate standards of warmth. This was used in England prior to July 2013 and is still used in Scotland, Wales and Northern Ireland. The low income high costs (LIHC) definition of fuel poverty is currently used in England and defines a household as fuel poor if it has above-average required energy costs and if meeting its required energy costs would push it below the poverty line. See the UKRN's first report on affordability for more details.

[13] Figures for Northern Ireland relate to 2011, for Wales 2012 and for Scotland 2013

[14] Centre for Sustainable Energy Nov 2104 'Research on fuel poverty - The implications of meeting the fourth carbon budget' http://www.theccc.org.uk/wp-content/uploads/2014/11/CCC_FinalReportOnFuelPoverty_Nov20141.pdf Summary Table 3 This uses the LIHC definition of fuel poverty.

[15] Centre for Sustainable Energy Nov 2014 'Research on fuel poverty - The implications of meeting the fourth carbon budget' http://www.theccc.org.uk/wp-content/uploads/2014/11/CCC_FinalReportOnFuelPoverty_Nov20141.pdf

There are, however, wider issues that will affect future fuel poverty, for example how policies and measures are paid for and whether the benefits of energy efficiency measures translate into fuel bill savings or are taken as increased warmth.

2.24. Water and sewerage bills in England and Wales are unlikely to change evenly, with some companies needing to invest more than others over the next 10 years. By 2030, the Defra model[16] estimates that Welsh Water (£520), South West Water (£507), Wessex Water (£462) and Thames Water (£412) could have the highest average bills. The distribution of bill changes is also affected by the pace of metering in England and Wales[17]. Large households with a water meter are likely to have higher bills than if they were unmetered if the rateable value of their property is relatively low, and so areas with high levels of metering are more likely to have large families at risk of affordability problems. Areas with low metering are more likely to find affordability problems focussed on single occupant households paying relatively high unmetered bills if the rateable value of their property is comparatively high.

2.25. Household customers in Scotland are unmetered and affordability in the water sector is addressed through Principles of Charging set by Scottish Ministers. In practice, this means that price rises are kept at or below inflation and charges are related to ability to pay through a direct link to the Council Tax system. Households in lower Council Tax bands pay lower water and sewerage bills, and those who receive a discount to their Council Tax charge (e.g. customers on benefits) also receive a discount to their bill.

2.26. In the communications sector, different consumers see different services as 'essential'. For example, for some customer segments (particularly older consumers) a fixed voice line is considered essential whereas other consumer segments may rely entirely on mobile or internet-based communications (and indeed those types of communications can be very important for economic and social purposes). Ofcom has put specific measures in place to mitigate against these sections of society being unable to access relevant services.

How household incomes might change in relation to bills and fares in the future

2.27. The analysis so far has looked at how bills and fares for essential services might change in the future. Consumer affordability, however, also depends on future changes in household incomes. Even on an average basis, changes in household incomes are very hard to predict, with future household income being dependent not only on income from employment but also non-employment income such as pensions, as well as the effect of the tax and benefit system.

2.28. In recent years, household incomes have been slow to recover from the recession. Real median household income is projected to be at around the same level in 2014/15 as in 2007/08 before the financial crisis and about 2% below its 2009/10 peak[18].

[16] Defra July 2015 'Cumulative impact of regulation and policy on future water bills' available at http://randd.defra.gov.uk It should be noted that Defra emphasise that average bill estimates at the water company region level are subject to strong uncertainties.

[17] Ofwat 2011 'Affordability and debt 2009-10 – current evidence' http://www.ofwat.gov.uk/future/customers/metering/affordability/pap_tec201105affevid.pdf

[18] IFS March 2015 Living Standards: Recent Trends and Future Challenges http://www.ifs.org.uk/uploads/publications/bns/BN165.pdf. This uses household income before housing costs and adjusts income using the RPIJ measure of inflation.

2.29. Estimates suggest that real income per household will increase by around 1% between 2014 and 2020[19]. This implies that in terms of the average consumer and based on central scenarios for bill outcomes, energy and water bills should account for a slightly lower proportion of household incomes in 2020 compared to 2014. As the government has committed to capping regulated rail fares at RPI these should also decline as a proportion of household incomes by 2020.

2.30. Ofcom is only able to comment on future prices and their impact on affordability in a more general way. It is not possible to provide meaningful quantitative analysis of the future prices of fixed and mobile communications services; retail prices are primarily set by the market as a result of competition, and whilst Ofcom has an important role in encouraging competition, its role in retail prices is more indirect and it does not generally compile forecast data. In addition, the structure and dynamics of the fixed and mobile communications markets are very different to those of the other regulated sectors covered by this report meaning that there is a less direct link between overall input costs and the prices of essential services; there is much greater scope for service differentiation, technological development has a greater role to play, and input costs tend to be recouped through the expansion of the market rather than over the whole asset base.

[19] Based on OBR estimates of real household income http://budgetresponsibility.org.uk/economic-fiscal-outlook-july-2015/ Chart 3.21 and DCLG household projections https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/407641/Household_Projections_Published_Tables.ods Table 401

Table 1: summary of factors influencing future fares and bills for essential services

	Energy	
Key cost inputs	**Wholesale costs and cost of debt may increase over time although it is very hard to predict future movements in global markets**	The future wholesale cost of gas and electricity is highly uncertain, but has a large impact as it makes up just under half of a current dual-fuel bill. Interest rates are currently below their long term trend and therefore may increase over the longer term
Regulatory intervention	**In GB, price control mechanisms ensure that investment is delivered at a fair price to consumers. Significant infrastructure investment is expected to increase the electricity transmission component of bills to 2021. The distribution network component likely to reduce under the current price control. Regulatory changes at a European level should help to promote cross border efficiencies**	Transmission and distribution components account for around 22% of dual-fuel bills. Other major regulatory interventions e.g. new interconnectors and wholesale market changes are expected to have limited direct impacts on consumer bills but have a positive indirect effect through decreased wholesale prices. In Northern Ireland, regulated end user prices for domestic consumers remain in force in the gas and electricity sectors
Sector-related policy	**The cost of energy and climate change policies, including new infrastructure investment, is estimated to make up an increasing proportion of domestic bills in the future but energy efficiency delivered by policies helps offset costs.**	DECC estimates that for the average combined gas and electricity bill, energy and climate change policies make up 7% in 2014, rising to 14% in 2020, then declining slightly to 13% in 2030. The impact of policies is much greater for electricity bills than gas bills. Analysis shows that the impact is heavily dependent on energy efficiency measures.
Technological change	**Technological change being driven by the transition to a lower-carbon energy system and more flexible 'smart' grids**	The impact of smart-meters is expected to be positive although limited over a 10 year timeframe. The impact of other technological developments is highly uncertain e.g. increased penetration of electric vehicles may increase energy bills but be offset by reductions in other household expenditure.
Market competition and liberalisation	**Continued competitive pressure from new entrants will facilitate better outcomes for consumers. Greater European integration and further interconnection may also help to decrease future price pressure.**	Future competition in the retail energy market will be influenced by any CMA remedies (if applicable). Within the regulatory system for monopoly networks Ofgem aims to introduce further competition in order to drive efficiency e.g. competitive tendering for onshore transmission.
Demand developments	**Consumption is expected to continue to decline**	Energy consumption by households has been decreasing in recent years. This is expected to continue but depends on many factors such as consumer attitudes/behaviour, energy prices, household income, policies (e.g. energy efficiency and product regulations) as well as new technologies e.g. use of smart-meters and electric vehicles

	Water	
Key cost inputs	**In the short term bills are largely unaffected by cost inputs, and bills will fall by around 5% in real terms over the next five years. In the long term uncertainty over enhancement expenditure and the cost of capital may put upwards pressure on bills**	In England and Wales, over the current price control period, bills are unlikely to be affected by changes in costs. Over the longer term, cost efficiency savings are still expected but opex costs will be strongly influenced by wages and energy prices. The cost of raising capital would increase if the cost of capital increases from current low levels. Overall, because capital costs are recovered over a long period (30 years or more), current input prices and borrowing costs have only a small influence on current customer bills. Similar factors affect bills in Scotland although because Scottish water is a publicly owned company, financing costs are generally lower and relatively more stable over time.
Regulatory intervention	**Ofwat price control allowed companies to offer bills which will fall by around 5% between 2015 and 2020**	Bills will be broadly flat in real terms across England and Wales over the next 10 years. Water companies are incentivised to cut costs through a cost-sharing mechanism whereby any cost reductions made within the price control period are partially kept by the company and partially shared with customers. It is estimated that future annual efficiency savings in the range of 0.5% (long-term)-1% (up until 2025) may be achievable in England and Wales.
Sector-related policy	**The cost of environmental legislation largely keeps bills flat in the short-term and declining after 2025 (but uncertain), however regional differences may disproportionately impact bills**	The Water Framework Directive is the key policy that impacts water and sewerage company costs. In England and Wales, the costs of compliance are expected to fall from a peak of 2.6% of water and sewerage bills in 2017 to 1.3% in 2025. Other significant policies are the urban wastewater treatment directive and water resource management.
Technological change	**Innovation including smart metering and more efficient water and sewerage treatment will reduce bills**	Water and sewerage companies can make efficiencies through adopting new technologies (such as smart meters) or innovative approaches to carrying out their functions, particularly in water resources or water/sewerage treatment. This can include direct improvements such as new filtration methods or new desalination methods. Consumer behaviour and fittings can also affect water use.
Market competition and liberalisation	**Retail market opening in 2017 should reduce non-household bills and could also reduce household bills as a spill-over effect**	The Water Act 2014 enables market reform for non-household retail and in upstream (water resources and treatment) services in England. Non-household retail market due to open in 2017 in England. Market reform expected to drive wider industry efficiency savings that will reduce household bills by about 1% by 2025, with majority of savings likely to come as the market matures over time. There are no plans to introduce upstream competition in Scotland or Wales.
Demand developments	**Water efficiency devices, and customer behaviour, will reduce bills**	Future demand highly uncertain. Total demand may increase as the number of households in England and Wales grows but effect on average household bills likely to be limited. Demand reduction measures likely to be important e.g. increased use of water meters, increased promotion of water efficiency, as well as reduced leakage. Reductions from behaviour measures vary but estimated at 10-15% of average household demand in England and Wales.

	Communications	
Key cost inputs	**Ofcom does not have data on future capex spend, however investment is likely to focus on new technology more than essential services**	Investment levels have been flat over the past five years. Even if there was to be a significant increase in levels of investment over this period, it is not clear that such a change would have a negative effect on affordability of essential services. Future investment is likely to continue the trend of investment being generally focussed on developing network capacity to deliver new and better services whose costs are unlikely to be recouped via essential services.
Regulatory intervention	**Ofcom regulation at the wholesale level helps ensure effective competition and lower prices for consumers, while targeted interventions are in place to ensure that a basic level of access is available to all**	At the wholesale level, Ofcom conducts regular market reviews and intervenes where appropriate to oblige firms with market power to supply wholesale inputs, introduce cost-based charge controls with efficiency targets and prevent margin squeeze. Encouraging competition helps deliver good outcomes for consumers in terms of price and quality of services. Ofcom also has a range of targeted measures at the retail level, including the USO, the safeguard cap on 2nd class stamps and the social tariff ensuring affordable access for vulnerable customers. Ofcom also has an active programme of work underway, including industry engagement measures and helping consumers navigate the market.
Sector-related policy	**The fixed Universal Service Obligation may impact on essential services while there are broader measures in place in relation to newer technologies (noting that higher speed connections may be considered essential in future).**	The government's "Digital Communications Infrastructure Strategy" published earlier this year includes a number of measures designed to promote access to broadband both at basic and at faster speeds. These include seeking to raise the USO from dial-up to 5mbps speeds, and a range of other measures with industry and other bodies to secure wide rollout (including to rural areas) of superfast broadband and mobile services
Technological change	**Does not generally impact essential services unless these services become legacy products and are phased out, changing what constitutes an 'essential service'**	Communications markets are defined by cycles of technological change and this is likely to persist. Such changes tend to exert downward pressure on prices; new technologies have generally reduced the cost of services and grown the market through the development of new and improved services, resulting in lower prices for those that demand new services.
Market competition and liberalisation	**Highly dependent on player strategies, about which Ofcom can speculate but with little certainty in a fast-paced market**	The level of competition in the market is a key factor in determining prices in the communications sector. It has a direct effect on both the underlying price that a communications provider can charge for a service, and the level of investment industry players make in order to achieve a competitive advantage.
Demand developments	**The nature of future demand for communications services is inherently uncertain**	The market is characterised by heterogeneous user needs and providers offer a range of different products and services to different segments of consumers. In addition, estimating the longer-term trajectory of demand for fixed and mobile bandwidth is difficult, given the changing technical requirements of services.

	Rail	
Key cost inputs	**The regulation of certain rail fares by the government means that they do not directly reflect changes in costs**	Unit costs in rail have fallen consistently over the last ten years, but there is also historically high level of new investment going into new infrastructure. Fare levels do not directly reflect costs or historic investment because many fares are regulated by government policy and some major rail infrastructure investment is directly funded by government.
Regulatory intervention	**Fares regulation by government will limit changes to no more than RPI on average over the next five years. In the longer term, regulation of Network Rail by ORR will continue to focus on driving down day-to-day unit costs whilst setting standards of punctuality and network performance.**	There have been efficiency savings in mainline rail infrastructure of 35 per cent since 2004-05. This has reduced cost pressures on the day-to-day running of the railway. Government still provides around £4 billion of subsidy to the rail sector each year, and also regulates some fares, meaning that there is only a weak relationship between regulatory outcomes and affordability of fares. Between 2004 and 2013 annual rises in fares regulated by government were limited to an average of RPI plus one per cent. Since 2014, this limit has been set at RP1.
Sector-related policy	**Government policy on rail fares and decisions about government funding for the rail industry are a key component of consumer affordability**	To protect consumers on routes where demand is inelastic, the government regulates fares. Approximately 45 per cent of fares are regulated. Between January 2014 and January 2015, the average change in regulated rail fares was 2.4 per cent. This represented an increase in real terms of 1.3 per cent as over the same period the RPI increased by 1.1 per cent. The government has pledged that for the whole of this parliament, regulated fares will only be able to rise by RPI and train operating companies will not have any flexibility to raise ticket prices above this.
Technological change	**Technological improvements will help passengers access the most appropriate fare for their journey. Network Rail is introducing new technology to improve efficiency of it business**	The use and range of smart phones apps, which take advantage of the availability of industry data, should enable passengers to plan their journeys better and secure greater value for money from the most appropriate ticket for their journey.
Market competition and liberalisation	**While the scope for on-rail competition remains limited in most areas, fare competition and innovation is a feature of some fast-growing routes**	Rail companies actively vary non-regulated fares according to the time of journey and when the ticket was purchased to compete with other modes – especially with air and coach travel over long-distance routes. On the few routes where there is competition between franchised operators and open access operators, customers tend to report higher overall satisfaction.
Demand developments	**Passenger demand is predicted to continue to grow strongly, requiring new investment that puts upward pressure on total costs, albeit that there may be opportunity to accommodate some growth through better use of the current network.**	There is competition between rail and other modes of transport for some journeys. However, for many rail users, demand is not sensitive to the level of fares. More broadly, rail use is a function of macroeconomic conditions (GDP, house prices, urban planning) rather than price of rail fares alone. Investment in High Speed 2 will liberate capacity on some long-distance routes, and may enable greater competition in some areas.

Conclusions

2.31. UKRN's first report on affordability demonstrated the increased pressure on household budgets that has occurred in recent years due to price rises for essential services in some sectors. Looking forward, real term increases in fares from the rail sector are expected to be limited over the next five years and over this period central forecasts for energy and water bills show a slight reduction. Over the longer term (to 2030) energy bills are expected to increase unless future energy efficiency measures help to significantly decrease consumption. Increasing use of new services may increase total communications bills, but should also help to drive down unit costs, meaning that bills for essential services do not increase.

2.32. Our analysis shows that each sector has a unique combination of factors affecting future bills, reflecting different market structures and underlying factors determining future bills. However, for the energy and water sectors, the impacts of many of the underlying factors are expected to be broadly similar (although the expected scale of impact may vary), with key cost inputs expected to put upward pressure on bills and regulatory intervention, future technological change, greater competitive pressure and other changes in demand expected to reduce the pressure on bills. In the rail sector, regulated fares are determined by government and therefore government policy is a key component of determining future fares, although technological change and investment due to demand developments may also be important over the longer term.

2.33. Given the capital-intensive nature of the sectors, infrastructure costs are obviously an important component of total industry costs. However, the scale of expected future investment, and therefore its potential impact on future bills, is different in each sector. Energy sector investment accounts for around 60% of UK's total infrastructure projects in the current National Infrastructure Plan pipeline. Crossrail and High Speed 2 (if approved) are important enhancement and investment projects in rail and will become increasingly significant over the next few years. Estimated investment in the water sector is less significant but individual investment projects may have distributional effects, for example the Thames Tideway Tunnel, the largest investment project in the sector since privatisation, will only impact customers of Thames Water in the south east of England. In the communications sector infrastructure costs do account for a significant proportion of capex, however it is difficult to accurately forecast capex and investment is unlikely to be recouped through the retail pricing of essential services.

2.34. This report suggests that in terms of the average consumer and based on central scenarios for bill outcomes, energy and water bills should account for a slightly lower proportion of real household incomes in 2020 compared to 2014. However, we know that there are certain groups of consumers that are likely to have greater affordability issues. Across all sectors this includes those on low incomes or with particularly high consumption needs. There are also sector specific factors that may make consumers more at risk. In the energy sector those in older, private sector housing (especially the private rented sector), those in rural, older properties without mains gas supply, working-age families in larger, older, solid wall properties in urban areas and those living in electrically-heated flats may be most at risk. From a water perspective, areas with high levels of metering are more likely to have large families at risk of affordability problems, and areas with low metering are more likely to find affordability problems focussed on single occupant households paying relatively high unmetered bills.

2.35. Different market structures and the role of regulators in them, means that some regulators have a greater influence over future bills and fares than others. UKRN's initial report on affordability summarised the help which is available for consumers who are struggling to afford essential services. UKRN's future work in this area is considering the potential to develop a more coordinated approach

among regulators to ensure that consumers who may be in vulnerable circumstances, due to non-financial as well as financial factors, can access help more easily. Despite the greater influence of some sectors than others on overall household bills and fares, there are benefits from sharing lessons learnt across sectors. In this context, UKRN has an important role to play in ensuring that its members reap the benefits of co-regulatory activities and of effective information sharing.

3. Future electricity and gas bills

Introduction

Changes to future bills

3.1. Energy bills have been rising in recent years: average energy spend increased from around 3% of total household expenditure in 2004 to around 5% of total household expenditure in 2013[20]. Whilst this is not a historical high, it is recognised that it has put pressure on household incomes, especially amongst lower income and other vulnerable households. It has also increased interest in the likely future trajectory of bills.

3.2. There are a number of estimates of future bills in the electricity and gas sectors. Both the Committee on Climate Change and DECC provide estimates for gas, electricity and combined gas and electricity bills out to 2020 and 2030[21]. Figure 3 below provides a summary of the results of their latest analysis (2014 prices)[22]. The CCC estimates a slight reduction in the average dual-fuel bill by 2030, dependent on energy efficiency measures required to meet carbon budgets being successful. DECC, however, estimates a small reduction to 2020 but an 11% increase in real terms between 2014 and 2030, which in part reflects that DECC's analysis does not include any new energy efficiency policies or extensions to current energy efficiency policies beyond 2022 that may be required to meet the 4th Carbon Budget and beyond. Neither of these estimates includes the changes to the Levy Control Framework budget announced in July 2015 (see the section on sector-related policy).

3.3. The differences in the estimates by DECC and the CCC are due to varying assumptions, a key factor being different consumption levels: the CCC analysis focuses primarily on a typical 'dual-fuel' household that uses gas for heating and electricity for lighting and appliances whereas the DECC figures look at average bills across all household types. This shows how difficult it is to predict future bills as reasonable and credible differences in assumptions can result in significant differences in the estimates.

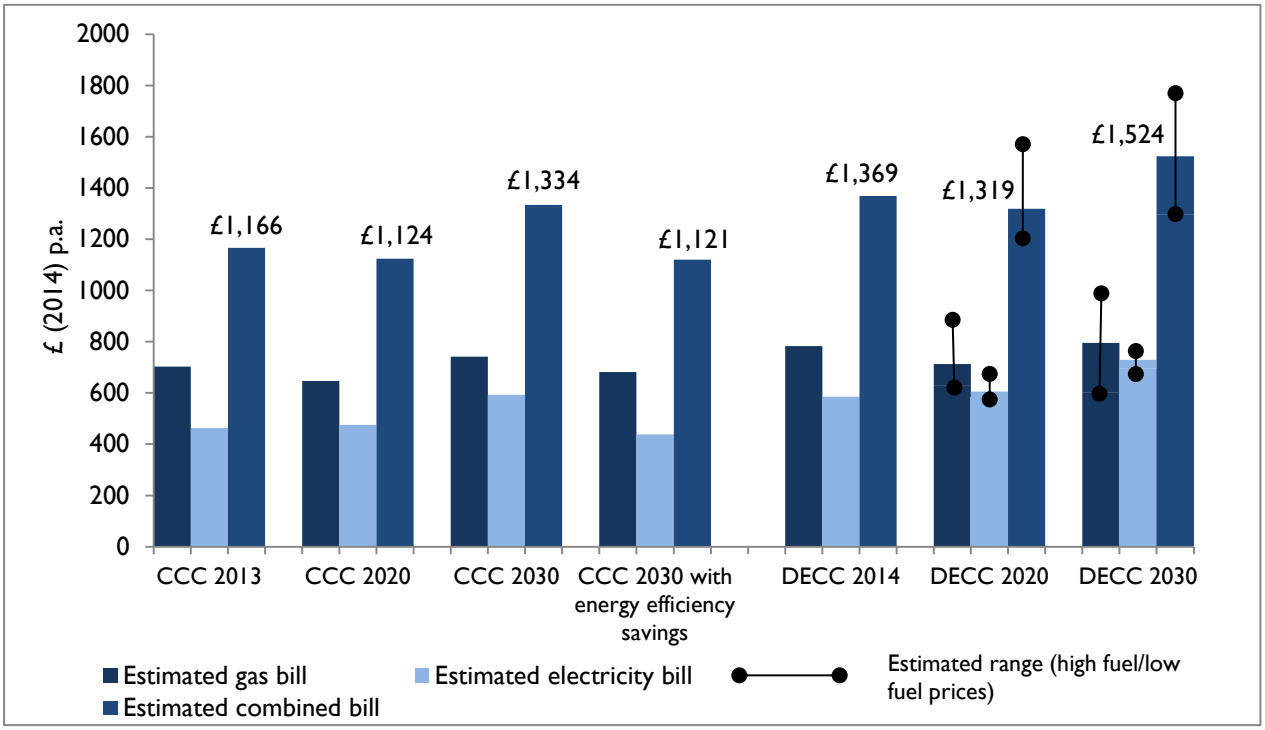
3.4. Energy bills are made up of a number of key components: wholesale energy costs, the costs of transportation via transmission and distribution networks, supplier costs and margins, policy costs and VAT. Looking 10 years into the future, there are uncertainties around all of these components: differing assumptions about the future path of any of these can alter future bill estimates considerably and therefore any future estimates are highly uncertain. An example of this uncertainty is the different assumptions about the future price of fossil fuels. The effect of differing fossil fuel assumptions is highlighted on the graph below, for example, DECC's 2020 estimates range between £1,213 (-8% compared to the central estimate) and £1,569 (+19% compared to the central estimate).

[20] ONS "Family Spending", various releases, 1993-2014, http://www.ons.gov.uk/ons/rel/family-spending/family-spending/index.html

[21] DECC Nov 2014 'Estimated impacts of energy and climate change policies on energy prices and bills' https://www.gov.uk/government/publications/estimated-impacts-of-energy-and-climate-change-policies-on-energy-prices-and-bills-2014, CCC Dec 2014 'Energy prices and bills – impacts of meeting carbon budgets' http://www.theccc.org.uk/publicationtype/energy-prices-and-bills/

[22] All prices are 2014 prices. Unless otherwise stated, if the original analysis is not in 2014 prices, then prices have been converted using the RPI index.

Figure 3: Estimated future energy bills in 2020 and 2030



Source: DECC 2014 'Estimated impacts of energy and climate change policies on energy prices and bills', CCC 2014 'Energy prices and bills – impacts of meeting carbon budgets'

The role of infrastructure investment

3.5. There are many factors influencing future energy bills and it is recognised that infrastructure investment is one of them. Large-scale investment in both the gas and electricity sectors is needed to replace existing infrastructure, ensure security of supply and meet both UK and EU legally-binding environmental targets.

3.6. The 2014 National Infrastructure Plan identified an infrastructure pipeline for energy of £226bn (excluding the upstream oil and gas sector), of which £121bn is expected to be delivered by 2020/21. This £121bn includes £66bn of energy generation investment, £8bn investment in gas distribution and transmission and £39bn investment in electricity distribution and transmission. The impact of proposed infrastructure investment on future energy bills is highlighted in the subsequent sections of this chapter.

Key cost inputs

Wholesale costs

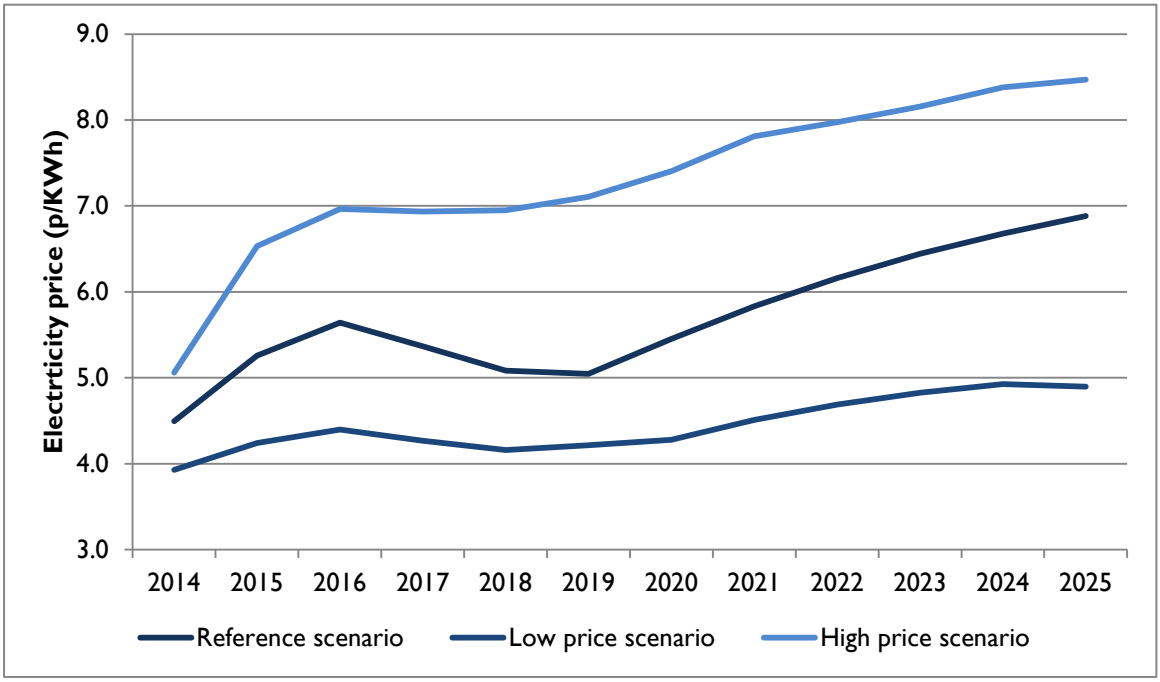
3.7. The wholesale costs of gas and electricity make up nearly half of a current dual-fuel bill[23]. Whilst wholesale costs are affected by policies (e.g. the EU Emission Trading System and Carbon Floor Price increase the wholesale electricity price whilst support mechanisms such as the Capacity Market depress the wholesale electricity market), the underlying price of fossil fuels is key. Given declining indigenous production, the GB gas market is now part of the global market and competes for gas with others in Europe from sources across the world. Global supply and demand dynamics are extremely difficult to

[23] DECC Nov 2014 'Estimated impacts of energy and climate change policies on energy prices and bills' https://www.gov.uk/government/publications/estimated-impacts-of-energy-and-climate-change-policies-on-energy-prices-and-bills-2014

predict as they can be affected by political and economic situations and natural disasters around the world. Forecasts of future wholesale prices can therefore change quite substantially year-on-year (e.g. the 2020 oil price forecast by the Office of Budget Responsibility (OBR) decreased by 17% between Dec 14 and March 15)[24] and are highly uncertain.

3.8. DECC's latest estimates of wholesale prices[25] have a number of projections based on different pricing and economic growth assumptions. Figures 4 and 5 below show the reference, low price and high price scenarios for electricity and gas.

Figure 4: Projected wholesale electricity prices

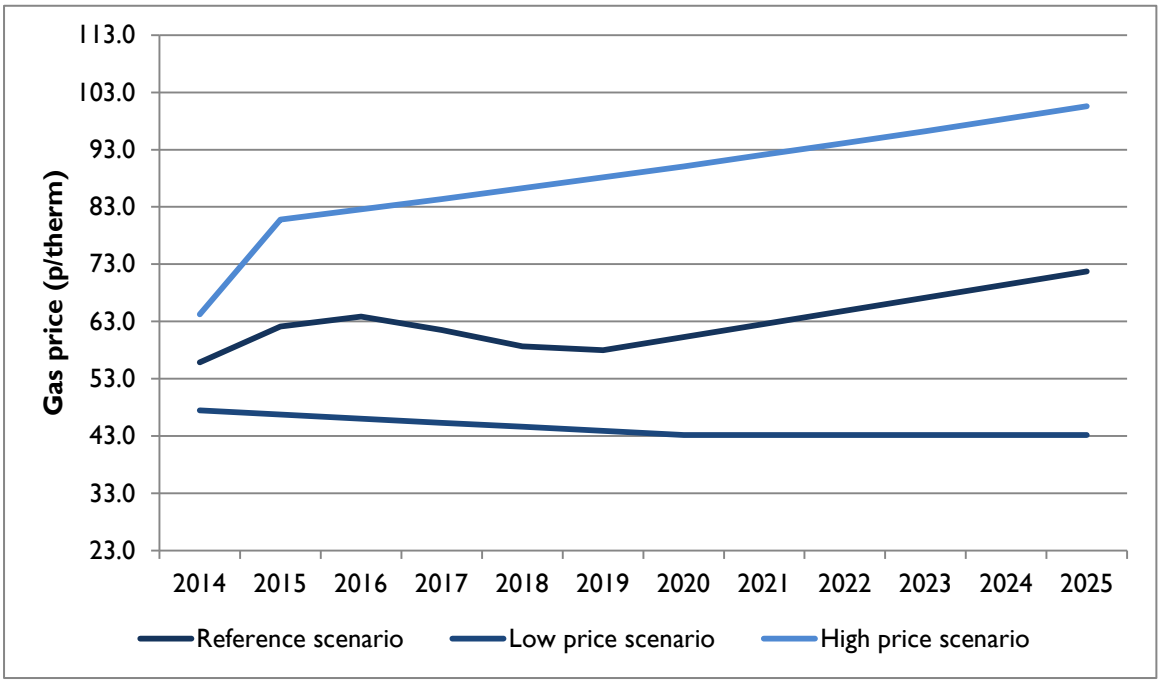


Source: DECC updated energy and emissions projections 2014

[24] OBR March 2015 'Economic and Fiscal Outlook' http://budgetresponsibility.org.uk/economic-fiscal-outlook-march-2015/

[25] DECC 2014 'Updated energy and emissions projections' annex M - https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2014

Figure 5: Projected wholesale gas prices



Source: DECC updated energy and emissions projections 2014

3.9. There is no consensus, however, about the future movement of wholesale prices, with some suggesting stable or falling wholesale electricity prices at least to the end of the decade[26]. Falling wholesale prices would reduce the pressure on future consumer bills. They would also affect the impact of some government policies for example by putting pressure on the Levy Control Framework (since lower wholesale prices increase the support provided under contracts for difference and therefore constrain the amount of low carbon generation that can be supported).

Cost of capital

3.10. Given the capital intensive nature of energy generation and networks, the cost of capital is an important cost driver. For regulated network companies, the cost of capital feeds through to the companies' 'allowed revenues' The RIIO[27] price controls used a weighted average cost of capital of between 3.76% and 4.76% at the start of the price control periods[28]. The cost of capital for the network companies can vary throughout the price control period with changes in the relevant cost of debt indices, which use 10 to 20-year trailing averages of market interest rate data.

3.11. For generation, the cost of capital will feed through via the wholesale price. Cost of capital for new generation projects is likely to be highly variable depending on the perceived project risk and the company's capital structure and effective tax rate. This is demonstrated by DECC estimates of

[26] E.g. see http://www.economist.com/news/britain/21606014-how-cheaper-energy-could-threaten-britains-green-ambitions-reassuringly-expensive or http://www.dieterhelm.co.uk/sites/default/files/Electricity%20and%20energy%20prices_0.pdf

[27] RIIO is Ofgem's framework for price controls (Revenue=Incentives + Innovation + Outputs)

[28] This refers to the 'vanilla' weighted average cost of capital which uses a pre-tax cost of debt and a post-tax cost of equity.

technology-specific hurdles rates[29] ranging from 5.3% for large-scale solar to 23.8% for geothermal CHP. These costs might be expected to decline as new technologies mature.

3.12. The allowances for the cost of capital in regulated revenues for networks will be affected by market interest rates, which have been at historically low levels in the UK for a number of years. While interest rates remain relatively low, they will have a downward influence on the trailing averages used in the RIIO cost of debt indices, while interest rate increases in the medium to long term would at least slow down this effect and could lead to increases in cost of debt allowances in due course.

Regulatory intervention

3.13. Ofgem is responsible for the energy sector (gas and electricity) in Great Britain, with the Utility Regulator responsible for energy regulation in Northern Ireland. Regulatory activity can impact consumer bills in many ways, as highlighted in the remainder of this section.

Price controls

3.14. Ofgem regulates monopoly networks in Great Britain through a price control mechanism. The price control is a revenue allowance which determines how much the owners of transmission and distribution networks can collect from customers although the final impact on consumer bills is uncertain as suppliers may absorb changes in network costs. Network costs account for around 22% of an average dual-fuel bill[30].

3.15. Ofgem's current price control framework is RIIO (Revenue=Incentives + Innovation + Outputs). It is designed to encourage network companies to put stakeholders at the heart of their decision-making, to invest efficiently to ensure continued safe and reliable services, to innovate to reduce network costs for current and future consumers and to play a full role in delivering a low carbon economy and wider environmental objectives

Gas distribution: RIIO-GD1

3.16. RIIO-GD1covers the 8 gas distribution networks and lasts for 8 years from 2013 to 2021. The gas distribution element accounts for around 10% of an average dual fuel bill. Gas distribution networks have an allowed expenditure of £17bn over the 8 year period to deliver a range of safety, reliability, environmental, new connections, social obligations and customer outputs. Within the RIIO framework, companies are incentivised to outperform their allowances, with customers benefitting from this through a sharing mechanism in which they receive 36% of any underspend on capital and operating expenditure.

3.17. In the latest annual report published in March 2015[31], companies forecast that their actual eight-year costs will be 11% below their expenditure allowance. The distribution transportation component of an average annual consumer's bill is estimated to reduce by £7.80 in real terms (5%) from £143.40 in

[29] DECC Dec 2013 'Electricity Generation Costs' https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/269888/131217_Electricity_Generation_costs_report_December_2013_Final.pdf. Annex 3. Figures quoted are pre-tax real hurdle rates under CfDs
[30] https://www.ofgem.gov.uk/network-regulation-riio-model/energy-network-how-it-works-you (August 2015)
[31] Ofgem 2015 'RIIO-GD1 Annual Report 2013-14' https://www.ofgem.gov.uk/ofgem-publications/93973/riio-gd1annualreport2013-14-final-pdf

2013/14 to £135.60 by the end of RIIO-GD1[32]; part of this reduction is driven by this cost outperformance.

3.18. Table 2 below shows the estimated distribution transportation component of an average consumer bill for each of the gas distribution networks. The difference between costs is caused by the individual characteristics of each of the gas distribution networks.

Table 2: Estimated distribution transportation component of an average consumer gas bill, GB

Company	Gas Distribution Network	2014 (2014 prices)	2021 (2014 prices)	% change
National Grid Gas plc	East of England	£136.30	£128.10	-6.0%
	North London	£154.30	£148.40	-3.8%
	North West	£139.20	£128.50	-7.7%
	West Midlands	£140.10	£134.10	-4.3%
Northern Gas Networks Ltd	Northern Gas Networks	131.20	£129.10	-1.6%
Scotia Gas Networks Ltd	Scotland	£132.20	£130.60	-1.2%
	Southern	£159.40	£144.00	-9.6%
Wales & West Utilities Ltd	Wales and West	£146.50	£140.90	-3.8%
Industry average		**£143.40**	**£135.60**	**-5.5%**

Source: Ofgem: RIIO-GD1 Annual Report 2013-14

3.19. These estimates may be revised in future years depending on how efficiently companies are able to deliver the required outputs, changes to non-controllable costs (such as licence fees, network rates, pension contributions) and performance against incentive mechanisms that reward or penalise network companies' performance in areas such as customer satisfaction and environmental and social objectives. Bill impacts beyond 2021 will depend on the outcome of the next price control.

Transmission: RIIO-T1

3.20. RIIO-T1 is the price control covering the 3 onshore monopoly electricity transmission owners and the one gas transmission owner in Great Britain. It also lasts for 8 years from 1st April 2013 to 2021. Gas and electricity transmission costs account for around 4% of the average dual fuel bill.

3.21. The final proposals for RIIO-T1 (as at April 2013) allowed revenues of £23.5bn (in 2014 prices) for the electricity and gas transmission companies across Great Britain[33]. The anticipated average change in annual consumer bills over the price control period was £5.40 (in 2014 prices), with increases as a

[32] The average domestic consumer bill in these calculations is based on an average annual consumption of 15300KWh.
[33] Ofgem 2013 https://www.ofgem.gov.uk/ofgem-publications/76230/riio-controls-come-effect.pdf

result of investment in the electricity transmission networks offset by a small decrease as a result of price controls on the gas transmission.

3.22. The increases in the electricity transmission costs reflect the need for substantial investment, in part to facilitate the growth of renewables. Significant infrastructure projects are expected over the next 10 years. Two projects funded prior to RIIO-T1 are due to complete over the next few years: an upgrade to transmission links between Beauly in the north of Scotland and Denny in central Scotland and a new sub-sea link between Scotland and England (the Western HVDC link). As part of RIIO-T1 business plans, electricity transmission owners identified projects under the Strategic Wider Works mechanism totalling approximately £9billion over the next decade. To date, 3 projects have been approved with a combined value of around £1.5bn: links between Kintyre and Hunterson, Beauly and Mossford, and Caithness and Moray[34].

3.23. In the latest annual report, the transmission companies are expecting to spend around £19bn across the 8 year period and the customer bill impact of transmission costs in the first year of the price control is lower than the original forecast. The estimates in paragraph 3.21 may therefore overstate future bill effects. However, these bill impacts may change going forward depending on numerous factors such as the how efficiently companies are able to deliver the required outputs, electricity demand and the growth of renewables. Bill impacts beyond 2021 will depend on the outcome of the next price control.

Electricity distribution: RIIO-ED1

3.24. RIIO-ED1 covers the 14 electricity distribution network operators in Great Britain and lasts for 8 years from 1st April 2015 to 2023. The distribution component of the bill accounts for around 8% of an average dual fuel bill.

3.25. The final determinations allowed revenues for the electricity distribution networks of £25.7bn (in 2014 prices) over the 8 year period to deliver a range of safety, reliability, environmental, new connections, social obligations and customer outputs. This results in average estimated annual savings in consumer bills of £10.50[35]. This varies by different DNOs/regions as shown in Table 3. Bill impacts beyond 2023 will depend on future price reviews. Northern Powergrid's two DNOs and British Gas Trading have appealed to the Competition and Markets Authority against elements of the RIIO-ED1 decision[36]. RIIO-ED1 has not been suspended in the meantime.

[34] Ofgem 2015 'RIIO-T1 Annual Report 2013-14' https://www.ofgem.gov.uk/publications-and-updates/riio-t1-annual-report-2013-14

[35] Ofgem Nov 2014 https://www.ofgem.gov.uk/publications-and-updates/infographic-how-ofgems-network-price-control-proposals-riio-ed1-will-affect-you

[36] See https://www.gov.uk/cma-cases/energy-price-control-appeal-british-gas-trading and https://www.gov.uk/cma-cases/energy-price-control-appeal-northern-powergrid for more details

Table 3: Estimated average annual savings in consumer electricity bills from RIIO-ED1, GB

Company	Regions	Total to be spent on the network 2015-2023 (converted to 2014 prices)	Annual average savings in consumer bills (converted to 2014 prices)
SP Energy Networks	Southern and Central Scotland, Merseyside, Cheshire, North Wales and Northern Shropshire	£3.3bn	£10.5
Scottish and Southern Energy	Scotland and Southern England	£3.7bn	£18.8
Northern Powergrid	North East England	£3.1bn	£14.6
UK Power Networks	South East England	£6.3bn	£4.2
Western Power Distribution	Midlands, South West England and Wales	£7.4bn	£8.4
Electricity North West	North West England	£1.9bn	£24.1

Source: Ofgem

Offshore transmission

3.26. Ofgem manages the regulatory regime for the construction and operation of offshore transmission assets for offshore wind energy projects. Under the regime, Ofgem runs a competitive tender process to select and license Offshore Transmission Owners (OFTOs). Since June 2009, Ofgem has licensed thirteen OFTOs for assets worth over £2.5 billion in total.

3.27. In the period from 1 April 2014 to 31 March 2015 National Grid Electricity Transmission (NGET) estimated the first twelve OFTOs would earn a total allowed revenue of approximately £218m[37]. This revenue was to be recovered by NGET through Transmission Network Use of System (TNUoS) charges levied in 2014/15. To put this in context, the total annual revenue recovered from TNUoS charges in the Financial Year 2014/15 was £2.48bn. Offshore revenue therefore accounted for less than 0.1% of the total annual revenue to be recovered through TNUoS charges in 2014/15. The revenue recovered from network charges are split between generators and suppliers who may decide the proportion to pass on to the consumer.

3.28. At the end of Q3 2014, there was 4.4GW of offshore wind capacity installed[38], of which 2.4GW was connected to an offshore electricity transmission system. In 2015 West of Duddon Sands became the fourth offshore transmission project to reach financial close and licence grant in tender round two of the offshore regime, bringing the total offshore wind capacity installed to 2.75GW[39]. There are currently two offshore transmission projects worth approximately £350m being tendered[40] which, subject to the process to select and license an OFTO for each project, may deliver an additional 425MW of offshore windfarm capacity. The anticipated average change in annual electricity consumer

[37] Final TNUoS tariffs for 2014/15 can be found at: http://www2.nationalgrid.com/UK/Industry-information/System-charges/Electricity-transmission/Approval-conditions/Condition-5/

[38] DECC March 2015 'Delivering UK Energy Investment: Low Carbon Energy' https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/419024/DECC_LowCarbonEnergyReport.pdf

[39] https://www.ofgem.gov.uk/publications-and-updates/ofgem-grants-licence-west-duddon-sands-offshore-wind-farm-s-269m-transmission-assets

[40] https://www.ofgem.gov.uk/ofgem-publications/94269/coverletterdrafttenderregs2015consultation-pdf

bills as a result of known investment in the offshore electricity transmission networks is expected to be minimal.

Interconnection

3.29. Interconnectors provide transmission capacity for electricity to flow between two countries. Interconnectors can offer significant benefits for consumers in terms of lower electricity supply prices, lower costs of delivering security of supply and supporting the decarbonisation of energy supplies. Great Britain currently has four electricity interconnectors, which link us to France, Ireland, Netherlands and Northern Ireland. These links, totalling 4GW of installed capacity provide approximately 5% of GB's electricity capacity.

3.30. There are a number of proposals for new interconnectors to Belgium, Denmark, France, Ireland and Norway (totalling over 7GW) that are expected to be built by the early 2020s. Six of the seven proposed interconnectors are being assessed under Ofgem's new regulatory regime for interconnectors which involves a 'cap and floor' mechanism[41]. Under this, if developers' revenues exceed the cap then revenue above the cap is returned to consumers. Conversely if their revenues fall below the floor then consumers top up developers' revenues to the level of the floor. This mechanism is designed to encourage investment in interconnection by removing some developer risk. A rigorous assessment process ensures that only projects in consumers' interest will go ahead.

3.31. Modelling of the impacts suggests that the cap and floor mechanism payments would have minor impacts on consumer bills over the lifetime of the projects (25 years). Under the base cases considered, any floor payments were expected to be equivalent to a few pence on the average annual domestic GB consumer bill; for the FAB link to France projected revenues were expected to be above the cap and so the developer was projected to make payments back to consumers, equivalent to an estimated decrease of £0.33 on an average annual domestic GB consumer bill[42]. In addition, overall, most of the projects are expected to deliver significant consumer benefits for example through decreased wholesale prices.

3.32. The other project, ElecLink, has been granted an exemption from aspects of European legislation by Ofgem and the French regulator. This project is being developed on a merchant basis (without consumer underwriting) and is also expected to contribute to lower wholesale prices.

3.33. Ofgem has recently received expressions of interest for the second cap and floor application window for near-term electricity interconnectors which may be developed over the next decade. Ofgem expects to make a decision in autumn 2015 on the timing of the second application window.

[41] Ofgem has granted a cap and floor regime to the Nemo and NSN projects, to Belgium and Norway respectively. In July 2015, Ofgem also decided to grant the FAB Link, IFA2 and Viking Link interconnectors, to France and Denmark, a cap and floor in principle. Ofgem is currently consulting on an update on their assessment of the Greenlink project to Ireland and will make a decision on this project in autumn 2015.

[42] Estimates from IAs/decision documents: Project NEMO: https://www.ofgem.gov.uk/publications-and-updates/decision-cap-and-floor-regime-gb-belgium-interconnector-project-nemo, NSN project: https://www.ofgem.gov.uk/ofgem-publications/92096/nsnipaconsultation-final-pdf, FAB, IFA2, Viking projects: https://www.ofgem.gov.uk/publications-and-updates/cap-and-floor-regime-initial-project-assessment-fab-link-ifa2-viking-link-and-greenlink-interconnectors and Ofgem's recent update on the IPA of the Greenlink interconnector: https://www.ofgem.gov.uk/publications-and-updates/cap-and-floor-regime-update-our-initial-project-assessment-greenlink-interconnector

Other regulatory initiatives

3.34. In recent years, Ofgem has introduced a number of regulatory changes to the gas and electricity wholesale markets (e.g. the Transmission Constraint Licence Condition (TCLC), the gas Significant Code Review (SCR), the Secure and Promote Licence Condition, the electricity balancing Significant Code Review to increase market efficiency and ensure greater security of supply. The TCLC is a measure aimed at the electricity balancing market where there is potential for firms to have some market power during transmission constraints. The TCLC has had some success in bringing down the costs of transmission constraints, which helps reduce electricity market wholesale costs and benefit consumers. The Secure and Promote Licence Condition is aimed at improving power market liquidity with a view to reducing entry barriers for new retail suppliers. Over time, increased competition should keep pressure on retail bills. The electricity and gas SCRs are intended to use the price signal to incentivise market participants to provide security of supply in the least costly manner.

Sector-related policy

Overview

3.35. Government policy aims to address the 'energy trilemma' of ensuring a secure supply of energy at an affordable price, while achieving a low-carbon power system. There are numerous government policy tools[43] including energy efficiency policies, support for renewable generation, incentives to ensure security of electricity supply, carbon pricing, support for renewable heating and redistributive policies (e.g. Warm Home Discount). In addition, there are product policies and regulations that are driving efficiency improvements in boilers and appliances and phasing out the use of higher-polluting coal-fired plants. These policies impact bills either by changing the price of energy or by changing energy consumption.

3.36. Most of these policies, or their associated funding, are time-limited e.g. the Energy Company Obligation (ECO) scheme runs to the end of March 2017, and current Levy Control Framework (LCF) funding is agreed to March 2021. Over a 10 year timeframe, there is obviously considerable uncertainty around how some of the policy areas will be taken forward and how they will be funded.

3.37. DECC's analysis in November 2014 estimated that the cost of known policies would make up an increasing proportion of domestic bills in the future: for the average combined gas and electricity bill, energy and climate change policies were estimated to make up 7% in 2014, rising to 14% in 2020, then declining slightly to 13% in 2030. The impact of policies is much greater for electricity bills than gas bills[44]. However, the policies were estimated to deliver a net benefit with savings of £92 in 2020 and £62 in 2030 when comparing bills with and without current policies (2014 prices). These estimates do not include the changes to the Levy Control Framework budget announced in July 2015 (see below).

Impacts of key policies

3.38. The remainder of this section outlines the impact of three key policy areas that are funded through consumer bills: the capacity market, support under the LCF and support for domestic energy efficiency.

[43] For a description of DECC policies impacting consumer bills see Table B2 in https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/384404/Prices__Bills_report_2014.pdf

[44] Corresponding figures are 10% in 2014, 24% in 2020 and 26% in 2030 for electricity bills compared to 4% in 2014, 6% in 2020, 0% in 2030 for gas bills

Capacity Market

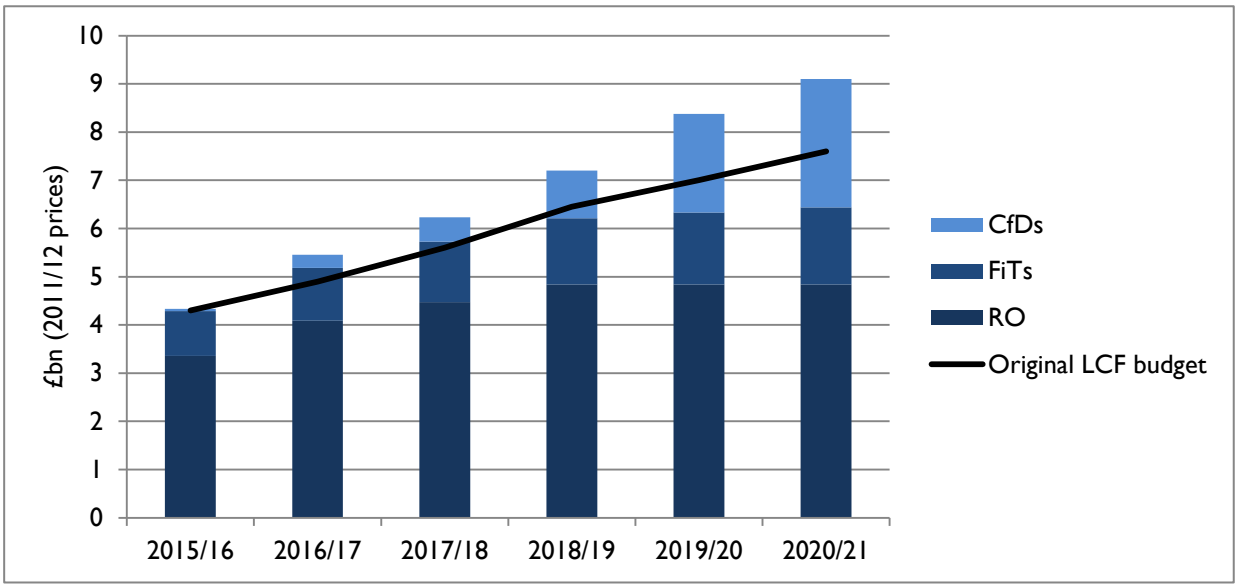
3.39. The Capacity Market is one of the key mechanisms introduced as part of DECC's Electricity Market Reform. The Capacity Market aims to ensure sufficient investment in the overall level of reliable capacity (both supply and demand side) needed to secure electricity supplies. It aims to bring forward new investment and get the best out of existing assets by competitively setting a price for capacity through annual auctions.

3.40. Initial estimates made by DECC are that the gross average impact on household costs of the first auction for delivery of capacity in 2018/19 will be around £11. However, the capacity market is expected to reduce spikes in the wholesale energy price, meaning bill payers are expected to pay less than £2 on average a year (equivalent to a 0.3% average increase in domestic bills).[45]

Levy Control Framework

3.41. The LCF sets annual limits on the projected costs of DECC's low carbon electricity levy-funded schemes until 2020/21. The schemes included are the Renewables Obligation, the Feed-in Tariff scheme and Contracts for Difference. The LCF caps the amount of support that can be provided under these schemes and therefore aims to limit the corresponding impact on consumer bills. The latest DECC estimates to 2020/21 are shown in Figure 6 below46. By 2020/21, the budget is projected to rise to around £9.1bn (2011/12 prices), around 20% above the original budget of £7.6bn. The original LCF budget was used in the bills estimates in Fig 3 and paragraph 3.37. Without mitigating action to reduce LCF spend, the new estimates would imply a further cost on consumer bills of around £20 in 202047. The budget for the LCF has currently not been set beyond 2020/21.

Figure 6: Levy Control Framework budget



Source: DECC Press Notice 'Controlling the cost of renewable energy' 22 July 2015

[45] DECC Jan 2015 https://www.gov.uk/government/news/the-first-ever-capacity-market-auction-official-results-have-been-released-today

[46] DECC July 2015 https://www.gov.uk/government/news/controlling-the-cost-of-renewable-energy. Prices for CfDs converted using CPI, consistent with DECC methodology.

[47] Policy Exchange July 2015 http://www.policyexchange.org.uk/media-centre/blogs/category/item/dear-energy-secretary-i-m-afraid-to-tell-you-there-really-is-no-money

Energy Efficiency

3.42. Energy efficiency schemes aim to help energy users reduce their bills by reducing consumption. However, some policies are funded through energy bills and therefore may increase bills for those not benefitting directly from the energy efficiency measures. The Energy Company Obligation (ECO) is funded in this way. It is a government scheme that requires larger suppliers to deliver energy efficiency measures to domestic premises in Great Britain and runs until 31st March 2017. Suppliers achieve their obligations by delivering energy efficiency measures including those targeted specifically at low income areas and other vulnerable households.

3.43. In addition to the ECO scheme which is funded through bills, the Green Deal also provided support for domestic energy efficiency improvements. Different funding mechanism were available e.g. improvements (such as solid wall insulation and new heating systems) could be funded through the savings in subsequent fuel bills[48]. In addition, the Green Deal Improvement Fund enabled eligible households in England and Wales to reclaim money (up to £5,600) for recommended energy saving measures. Government funding for the Green Deal was stopped in July 2015.

3.44. By the end of May 2015, around 1.5million energy efficiency measures had been installed in around 1.2 million homes through ECO.

3.45. In Northern Ireland, the Utility Regulator currently operates an energy efficiency programme, Northern Ireland Sustainable Energy Programme (NISEP). This is a voluntary incentivised programme of energy efficiency schemes, funded by customers through the electricity system in the form of a Public Service Obligation, with a small charge applied per kilowatt hour of electricity used by all electricity customers. In response to concerns about fuel poverty, since 2002 80% of the funding has been targeted at vulnerable households.

3.46. In addition, the government funds a number of energy efficiency schemes in Northern Ireland e.g. the Affordable Warmth Scheme, targeting households with an annual income of less than £20,000, and grants for the replacement of inefficient boilers.

Technological change

3.47. Technological change can help to drive down prices and change the way in which consumers use energy. The energy system is currently undergoing a major low carbon transition as new renewable technologies continue to develop; renewables share of electricity generation was 22.3% in Q1 2015[49] and DECC estimate this could be more than 30% by 2020[50].

3.48. At the network level, there is a trend towards smarter grids and greater flexibility. Key to this, is the implementation of smart meters in consumers' homes, that will enable customers to see how much energy they are using and potentially have more control over their energy use, either directly or through a third-party. The start of the mass roll-out has recently been delayed until 2016 but roll-out is still due to complete by 2020.

[48] https://www.gov.uk/government/news/70-million-for-home-energy-efficiency-through-the-green-deal-home-improvement-fund-release-3

[49] DECC June 2015 Energy Trends https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/437455/Energy_Trends_June_2015.pdf

[50] DECC March 2015 'Delivering UK Energy Investment: Low Carbon Energy' https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/419024/DECC_LowCarbonEnergyReport.pdf

3.49. DECC's impact assessment[51], based on roll-out commencing in 2015, estimated that, after a short-term increase in bills of around £6 at the beginning of the roll-out, bills should fall as a result of smart meters within 3 years. It estimated net savings to the average household bill of £27 by 2020 (around 2%) and £35 by 2025. The savings depend on consumers' response to the information provided by smart meters: consumers need to be willing and able to change their energy-related behaviour in order to reduce their energy bills. There have been numerous studies assessing consumer response to smart meters which demonstrate a range of consumer responses, both in terms of the initial scale and the persistence of the response. Whilst the DECC estimates are based on relatively conservative assumptions, there is still uncertainty as to whether the stated energy bill savings will be achieved[52].

3.50. There are other significant technological changes expected over the next 10 years, for example in the transport and heat sectors. Analysis by the Committee on Climate Change[53] shows that, in order to meet the fourth carbon budget, electric vehicle sales will need to increase substantially: in 2014 electric vehicle sales represented 0.3% of total new car and van sales whereas the CCC indicator trajectory suggests that by 2020 9% of new car sales will be electric vehicles and by 2030 this figure should have risen to 60%. The growth of electric vehicles may put upward pressure on electricity consumption and therefore bills, although the effect on household incomes could be offset by decreasing petrol/diesel costs.

3.51. CCC also emphasises the need for a very significant scaling up of investment in low-carbon heat in order to meet future carbon budgets. In 2013, low carbon heat accounted for around 1.6% of building heat demand, CCC suggests that the government ambition of 12% of heat from low carbon sources by 2020 no longer looks achievable. Increased penetration of heat pumps could reduce household energy bills for those installing them if, as expected, they are used to replace electric-heating in off-gas households.

Market competition and liberalisation

3.52. Competition is the principal tool available to Ofgem to drive down costs and bills and improve consumer choice and service. Competitive pressure from consumers will depend on how willing and able consumers are to engage in the market, for example by being able to compare different tariffs and easily switch suppliers. On the supply-side, an increasing number of market participants will help foster competition. The number of competitors in the retail energy market has increased over the last few years: as at July 2015, 24 companies were competing to provide households with dual fuel energy and five more companies were selling either gas or electricity to households[54]. Smaller suppliers have also been increasing their market shares: the market share of independent suppliers was 10% in March 2015 compared to 2% in January 2013. Their ability to sustain growth and remain in the market over the longer term will determine the impact on competition and bills.

[51] DECC Jan 2014 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/276656/smart_meter_roll_out_for_the_domestic_and_small_and_medium_and_non_domestic_sectors.pdf

[52] For example, the Public Accounts Committee Sept 2014 'Update on preparation for smart metering' http://www.parliament.uk/business/committees/committees-a-z/commons-select/public-accounts-committee/news/report-smart-meters/

[53] CCC June 2015 'Meeting Carbon Budgets – Progress in reducing the UK's emissions 2015 Report to Parliament http://www.theccc.org.uk/wp-content/uploads/2015/06/6.737_CCC-BOOK_WEB_030715_RFS.pdf

[54] https://www.ofgem.gov.uk/publications-and-updates/infographic-bills-prices-and-profits (July 2015)

3.53. There are also signs of market entry by participants using 'non-traditional business models'[55]. These include those offering local services (e.g. at community or municipal level or to housing associations), bundled services or services that aim to increase customer participation (such as peer-to-peer services or demand side flexibility). In the future these business models could help to transform the energy market and provide improved consumer outcomes, including lower bills.

3.54. Nevertheless, the assessment of the market by Ofgem, OFT and the CMA in March 2014[56] showed that currently competition isn't working as well as it should for consumers in GB. It showed continued incumbency advantage, weak customer response, increasing distrust of energy suppliers, uncertainty about the relationship between the supply businesses and the generation arms of the six largest suppliers, and rising profits with no clear evidence of suppliers reducing their own costs or becoming better at meeting customer expectations. As a result of this, Ofgem referred the energy market to the CMA; the CMA has published provisional findings and possible remedies[57] and will conclude its investigation by Dec 2015. If remedies are applicable, they will aim to increase competition in the retail market and would therefore be expected to put downward pressure on household bills.

3.55. Within the regulatory system for both distribution and transmission networks, Ofgem aims to introduce competition as far as possible. An evaluation of tender round 1 of the offshore transmission regime found that competitive tendering of offshore transmission assets saved consumers between £200m and £400m and it is expected the savings in tender round 2 will also be considerable[58]. Ofgem recently announced their intention to work with Government to introduce new competition arrangements for some of GB's electricity transmission network. Competitive tendering for new, separable, high value onshore transmission assets could benefit consumers through cost savings and innovation[59]

3.56. In NI, regulated end user prices for domestic consumers remain in force in the gas and electricity sectors. However, competition is also encouraged (for example through promotion and enforcement of rules around switching), with the aim that consumers benefit from a hybrid approach attracting the benefit of competition but also the transparency and control of price regulation

3.57. From a European perspective, there are a number of proposals that will ensure greater pan-European competition. For example, European Network Codes, proposed in the Third Package, form a legally binding set of common technical and commercial rules and obligations that govern access to and use of the European energy networks. Once in place, these common rules will facilitate competition and help to create a European wide internal energy market. Over the next 10 years the remaining European Network Codes are expected to be developed alongside implementation of the rules in to National legislation across the member states.

3.58. In February 2015, the European Commission published their Communication on an 'Energy Union'. It aims to provide reliable energy supplies at reasonable prices for businesses and consumers, with the minimum environmental impact. As part of the Energy Union, the European Commission's DG

[55] See discussion document Ofgem Feb 2015 https://www.ofgem.gov.uk/publications-and-updates/non-traditional-business-models-supporting-transformative-change-energy-market for more detail
[56] Ofgem March 2014 https://www.ofgem.gov.uk/publications-and-updates/state-market-assessment
[57] CMA July 2015 https://www.gov.uk/cma-cases/energy-market-investigation
[58] Ofgem 2014 'Conclusions of Consultation on the Evaluation of OFTO Tender Round 1 Benefits' https://www.ofgem.gov.uk/publications-and-updates/conclusions-consultation-evaluation-ofto-tender-round-1-benefits
[59] Ofgem March 2015 https://www.ofgem.gov.uk/publications-and-updates/ofgem-introduce-more-competition-electricity-transmission-network

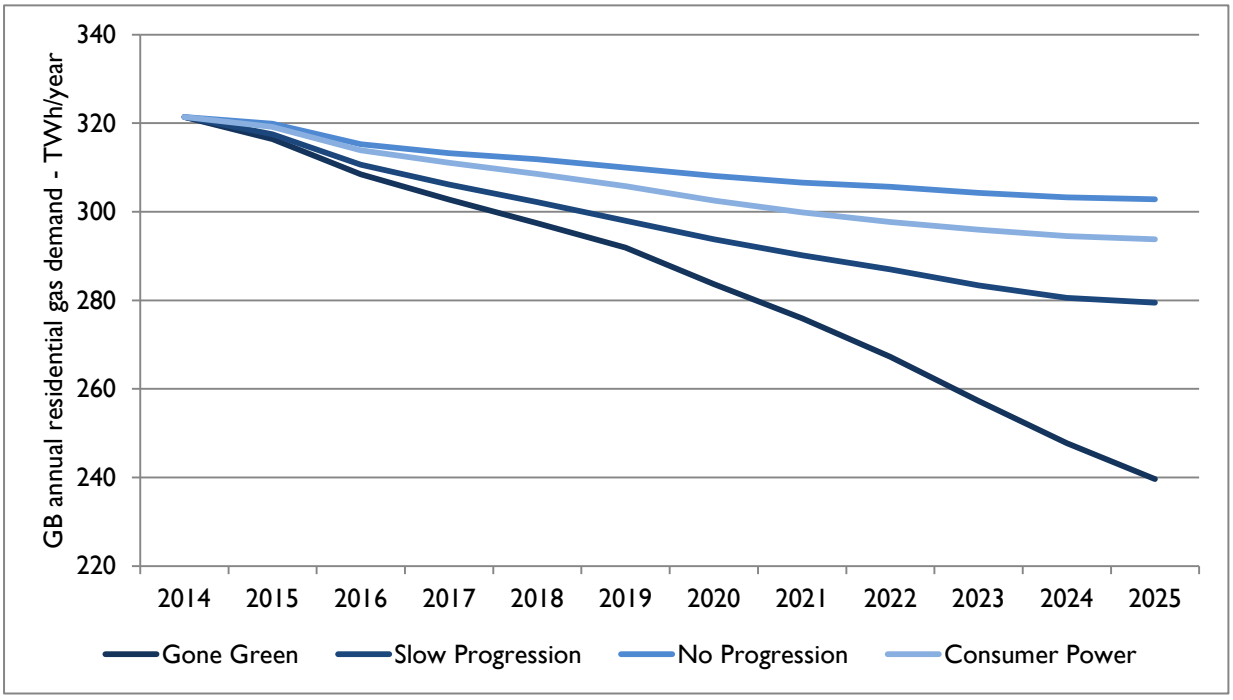
Competition will be looking to distinguish clearly between competitive and non-competitive parts of the market, free up the supply side of the market, remove restrictions on consumers changing supplier and assess individual member states' capacity aid schemes to ensure competition in the market.

Demand developments

3.59. Energy demand will be influenced by many of the other factors discussed in previous sections. It will also be affected by wider societal changes such as climate change. Total final energy consumption by households has decreased by around 20% since 2004 and is estimated to decrease by a further 4% between 2014 and 2025[60].

3.60. A more detailed view of the possible demand paths for both electricity and gas is provided by the National Grid's Future Energy Scenarios (FES). These scenarios aim to explore plausible and credible outcomes for the future of energy that aim to take account of the wide-ranging political, economic, social, technological and environmental uncertainty. Scenario outcomes for both gas and electricity residential demand are shown in the Figures 7 and 8 below[61]. Whilst overall energy demand declines, the current scenarios show a different pattern for gas and electricity demand.

Figure 7: Gas demand



Source: National Grid Future Energy Scenarios 2015

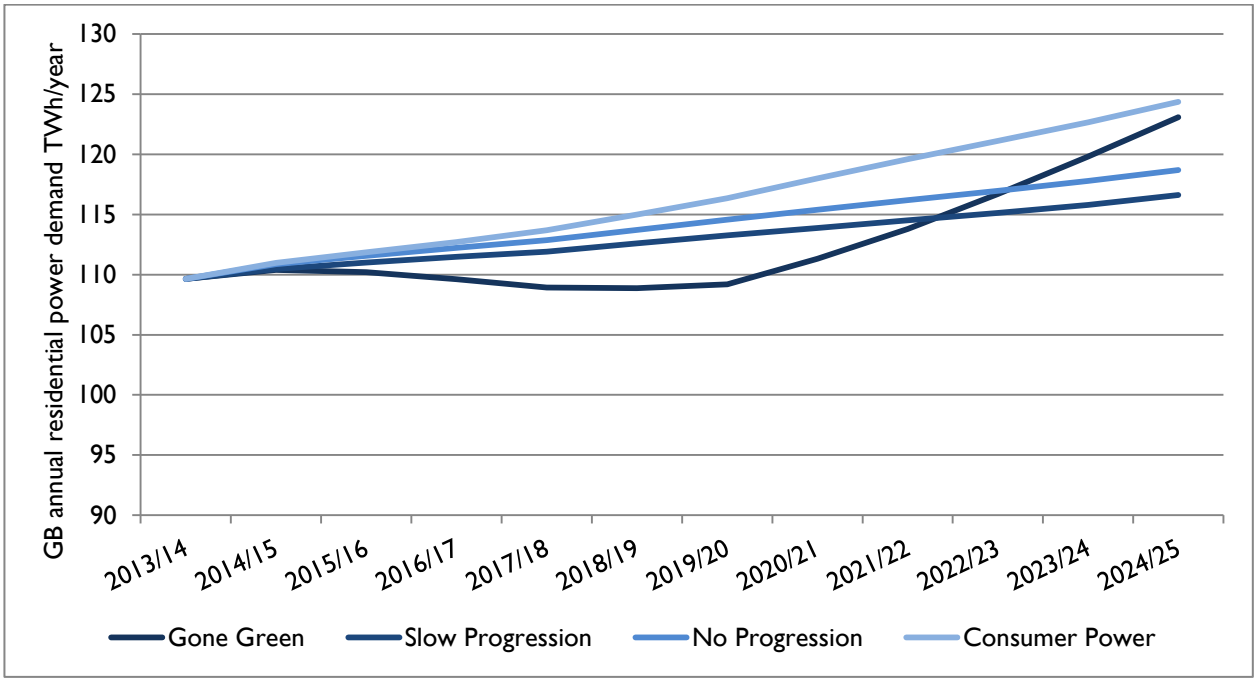
3.61. Residential gas demand reduces over the next 10 years in all of the FES scenarios. Residential gas demand is driven by heating demand in homes, which is influenced by building insulation, the efficiency of the boiler appliance or other heating appliance and the temperature of the property. Over the next 10 years, in this analysis, there are efficiency improvements from new gas boilers and increasing insulation across all scenarios; in Gone Green, there is a much greater penetration of low carbon

[60] DECC 2014 'Updated energy and emissions projections' annex F - https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2014

[61] The four scenarios make different assumptions about future sustainability and affordability, see http://www2.nationalgrid.com/UK/Industry-information/Future-of-Energy/Future-Energy-Scenarios/ for more detail.

heating technologies such as air source and ground source heat pumps, which causes a stronger decline in gas demand.

Figure 8: Electricity demand



Source: National Grid Future Energy Scenarios 2015

3.62. Residential electricity demand is influenced by many factors including household income, consumer attitudes and behaviour and energy efficiency policies as well as by new technologies such as the introduction of smart meters, the take-up of electric vehicles and electric heating and whether households have microgeneration. The most recent FES scenarios show increases over a ten year period. This is partly due to increases in household numbers but also due to increased power demand requirements from some appliances such as cooking appliances, telecoms appliances, dishwashers and tumble dryers. These increases are offset by an overall drop in demand from lighting as a result of the installation of more efficient LEDs. Under the Gone Green scenarios, after 2020 there is a increase in electricity demand due to a greater deployment of heat pumps.

3.63. The uncertainty around such projections is reflected by the fact the previous FES scenarios suggested a downward trend in residential power demand over the next ten years. Declining demand for residential electricity is consistent with central projections from DECC.

Relative impacts on different consumer groups

3.64. This chapter has discussed factors that may influence average energy bills, for example the estimates in Figure 3 are for the 'average' household. In reality, bills will vary depending on a number of different factors including household composition, household behaviour and the type of dwelling. As identified in the Phase 1 report, there are certain households that experience greater affordability issues with energy bills.

3.65. As well as low income and high required energy, key characteristics of fuel poor households in the UK currently include:

- older, private sector housing (and especially the private rented sector)
- off-gas, rural, older properties
- working-age families in larger, older, solid wall properties in urban areas (on gas)
- electrically-heated flats[62].

3.66. Fuel poverty is a significant issue for the devolved administrations; the Phase 1 report showed that under the 10% definition[63], 30% of households in Wales, 39% of households in Scotland and 42% of households in Northern Ireland were fuel poor. Lower average income levels, higher energy prices in some areas as well as differences in the housing stock (such as energy efficiency levels and fuel type) and consumption levels all contribute to the greater incidence of fuel poverty.

3.67. Work exploring possible future outcomes for fuel poverty[64] suggests that the combined impact of expected fuel price rises and measures needed to 2030 to meet the fourth carbon budget need not adversely impact on fuel poverty. Targeting measures specifically at fuel poor households could offset the impact of expected fuel price rises on fuel poverty levels to 2030.

3.68. The importance of targeted energy efficiency measures is demonstrated by an illustrative scenario that assumes that while low-carbon generation support costs are passed through to bills, there are no energy efficiency improvements. The results of this scenario shows a significant increase in fuel poverty:

- Under the 10% definition, fuel poor numbers in the UK were projected to increase from 5.6million in 2013 to 8 million in 2030. The percentage of households estimated to be fuel poor for the devolved administrations were: Wales 50%, Scotland 38% and Northern Ireland 67%.
- Under the LIHC definition for England only, the predicted increase was from 2.4 million to 2.6 million households, and the severity of fuel poverty increased substantially with the fuel poverty gap rising from £605 per household in 2013 to £814 per household in 2030.

3.69. This analysis found that targeting energy efficiency measures on those in greatest need has the potential to significantly reduce these impacts. The ability to identify and target fuel poor households and ensure that they take up appropriate and energy efficiency measures were identified as key. It also showed that there are wider issues that will affect future fuel poverty, for example, how policies and measures are paid for and whether the benefits of energy efficiency measures translate into fuel bill savings or are taken as increased warmth. DECC's Fuel Poverty Strategy sets a target to ensure that as many fuel poor homes as is reasonably practicable achieve a minimum energy efficiency rating of Band C by 2030.

[62] Centre for Sustainable Energy Nov 2014 'Research on fuel poverty The implications of meeting the fourth carbon budget' https://www.theccc.org.uk/wp-content/uploads/2014/11/CCC_FinalReportOnFuelPoverty_Nov20141.pdf p7
[63] The 10% definition of fuel poverty defines a household as fuel poor if it is spending more than 10% of its income on fuel to achieve adequate standards of warmth. This was used in England prior to July 2013 and is still used in Scotland, Wales and Northern Ireland. The low income high costs (LIHC) definition of fuel poverty is currently used in England and defines a household as fuel poor if it has above-average required energy costs and if meeting its required energy costs would push it below the poverty line. See the Phase 1 project for more details.
[64] Centre for Sustainable Energy Nov 2014 'Research on fuel poverty The implications of meeting the fourth carbon budget' https://www.theccc.org.uk/wp-content/uploads/2014/11/CCC_FinalReportOnFuelPoverty_Nov20141.pdf

4. Future water bills

Introduction

4.1. This section describes the likely levels of future water bills over the next ten years, and identifies the drivers that could affect future water bills.

4.2. Ofwat set five-year price controls for water companies in December 2014 which limit the revenue that companies can recover from customers each year for the period 2015-2020. Although this revenue cap does not directly limit household charges, Ofwat included a forecast of household bills for 2015-20 under these price controls.

4.3. Defra published a report in July 201565 which provided water bill projections until 2050 and analysis based on Ofwat's final price review data, river basin management plans, and company planning forecasts. This included examining the potential costs and benefits of the introduction of competition, regulatory measures introduced in the price review, and compliance with the EU Water Framework Directive.

4.4. WICS set a six year price control for Scottish Water in November 2014 which limits the increase in household charges to CPI-1.8% over the 2015-21 regulatory period66.This is consistent with the Principles of Charging issued by Scottish Ministers for the regulatory period, which require "charges that do not rise by more than inflation, as measured by the Consumer Price Index, across the period"67.

4.5. In Northern Ireland, there is currently no domestic water charging.

Headline forecasts in England and Wales

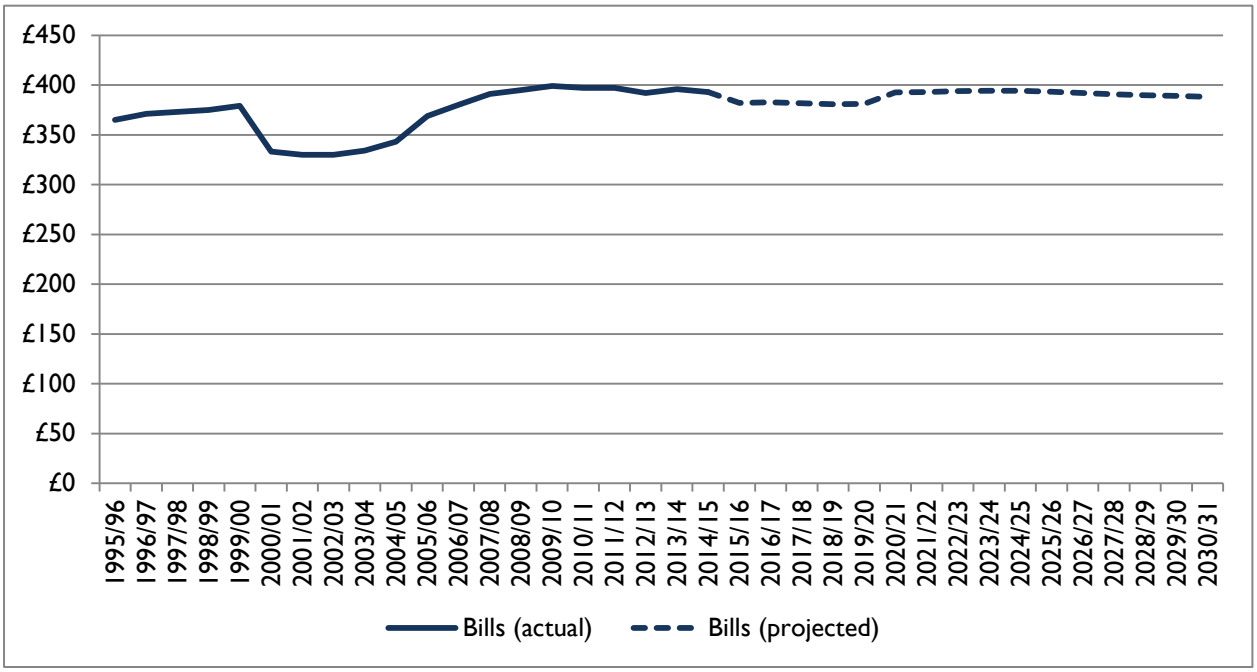
4.6. We expect water and sewerage bills in England and Wales to remain broadly flat in the short term and continue to decline in the longer term (before the effects of inflation are taken into account).

4.7. Figure 9 shows Defra's68 forecast bills under their 'baseline' set of assumptions. This forecast assumes that:

- enhancement expenditure (i.e. additional investment to meet new service demands) is estimated to decline in the long term (reducing bills by about £20 by 2050), though the scope and scale of future enhancement expenditure is uncertain. Companies are also likely to become more efficient in how they invest, reducing bills by a further £55 between 2015 and 2050
- market reform (introduced in the Water Act 2014) and measures introduced at the 2014 price review (PR14) are likely to reduce bills by about £25 by 2050
- the cost of capital assumed in the 2015-20 period (3.6%) is likely to be lower than the long-term trend due to current low interest rates and economic conditions forecast for this period. A return to the long-term trend (4.3%) could mean an increase of about £12 in bills in 2020.

[65] Defra July 2015 'Cumulative impact of regulation & policy on future water bills' available at http://randd.defra.gov.uk
[66] WICS 2014 'The Strategic Review of Charges 2015-21: Final determination' http://www.watercommission.co.uk/view_Determinations_2015-21.aspx
[67] General Statement of Policy – Principles of Charging for Water Services 2015-21, Scottish Government, 2014
[68] Defra July 2015 'Cumulative impact of regulation & policy on future water bills' available at http://randd.defra.gov.uk

Figure 9: Average Annual Combined Water and Sewerage Bills for England and Wales 1995/96 – 2030/31 (2014/15 prices)



4.8. In addition to these drivers, other factors can affect future water bills, including government policy (at UK, Welsh or EU level), input costs and output price inflation, and changes in the climate and demand patterns.

4.9. Affordability of future water bills is also likely to be driven by changes in wages relative to inflation. There are also changes in the distribution of water charges over time which will affect affordability, for example, water metering is likely to change the pattern of bills for different households.

4.10. Water and sewerage companies are regional monopolies with different bill levels (our previous report[69] showed that in 2014/15, water bills ranged from £97 to £252 and sewerage bills from £157 to £317). This is largely due to the different levels of investment required in different regions since privatisation, but future investment will affect companies' future bills differently, as new investment may be required in some areas but not others.

Headline forecasts in Scotland

4.11. We expect water and sewerage bills in Scotland to continue declining in real terms, not only relative to RPI but also relative to the lower CPI index, in both the short- and long-term.

4.12. Between 2015 and 2021 household charges will decline by 1.8% relative to CPI. This is equivalent to a 6% to 10% reduction relative to RPI (depending on the extent to which the long-run difference between RPI and CPI will widen in the future[70]).

[69] UKRN Jan 2015 'Understanding affordability pressures in essential services' http://www.ukrn.org.uk/wp-content/uploads/2015/01/UKRN-Affordability-Report.pdf

[70] The long-run difference between RPI and CPI Inflation, Working paper No. 2, , 2011

4.13. If Scottish Ministers maintained the requirement for "charges that do not rise by more than inflation, as measured by the Consumer Price Index, across the period" in the Principles of Charging for subsequent regulatory periods, household bills would remain stable or continue declining relative to CPI and decline significantly relative to RPI also in the long-term.

Key cost inputs

England and Wales

4.14. The water industry in England and Wales, like other regulated infrastructure sectors, uses a regulatory asset base (RAB) model to deal with investment (in water this is called the RCV, or regulatory capital value). Historically, capital expenditure has been added to the RCV and recovered over a long period of time, whereas operating expenditure has been recovered from customers in the five-year period in which it was incurred.

4.15. Under Ofwat's price reviews, the revenue companies are allowed to collect is broadly made up of three main elements:

- an allowance for operating expenditure
- an allowance for depreciation of the RCV (with new capex added to the RCV)
- a return on the RCV (to finance capital from equity and debt).

4.16. Each of these input cost elements (operating expenditure, capital expenditure and return) depends on changes in external factors. In the 2014 price control, companies were allowed to choose the proportion of totex that should be added to the RCV each year, rather than this being only capex, as long as their customers agreed with the subsequent impact on current and future bills.

4.17. Operating costs are most strongly influenced by wages and energy prices. These are likely to fall over time as companies become more efficient but will still be dependent on fluctuations in wages and energy prices. For affordability, reductions or stagnation in wage costs for water companies are likely to correspond to reductions or stagnations in household incomes.

4.18. Capital costs are more influenced by construction prices, which include raw materials as well as labour. Ofwat expects capital enhancement to fall over time but capital maintenance (that is, building to maintain the current service demands) to increase. This is because the need to build new assets to improve sewerage treatment, increase drinking water quality or to enhance resilience for water resources is likely to reduce over time, but these assets will still need to be maintained and repaired.

4.19. The return on the RCV is calculated using a weighted cost of capital – a blend of the cost of equity and debt. In the 2014 price review, Ofwat allowed a 3.6% return on RCV. This aims to estimate how much it would cost a company to borrow money to fund their capital programme.

4.20. 3.6% is much lower than the long-term trend for the industry, and is possible due to low interest rates and the current economic conditions favouring low risk investment. So capital has been available relatively cheaply to water and sewerage companies since 2010. Defra forecasts that the return on

RCV could increase to around 4.3% (the long-term trend) if the economy returns to its long-term trend[71]. This element is difficult to predict.

4.21. In the short-term, most of the risks and opportunities from increasing or reducing costs are borne by the companies with almost no impact on bills. This is because the revenues are set for five years at price reviews and are not generally affected by changes in input costs.

4.22. But there are two mechanisms for sharing risks and opportunities with customers. Firstly, the revenue allowed under price reviews is linked to RPI, so companies are able to increase (or decrease) prices with inflation. Although input prices (such as wages and energy) are not directly linked to inflation (and have diverged in the last few years), these have been broadly similar over the long term. The cost of capital is more closely linked to RPI.

4.23. Subsequent price reviews also help to share any increases or decreases in costs between customers and companies. Ofwat's menu mechanism means that a proportion of any underspend in costs are passed on to customers in the next price control as a reduction in bills, and vice versa for overspends. Some companies have proposed 'gain-pain sharing' mechanisms to share excess profits with customers, particularly as the cost of capital changes, and some reduced their prices below Ofwat's price limits in 2014/15 to return some of the profits from 2010-15 to customers.

4.24. Water and sewerage bills are not generally affected by short term changes in input prices, because of the long term capital investment nature of the sector. This means that capital costs are recovered over a long period (often 30 years or more) and there is significant historic debt, so current input prices and borrowing costs have only a small influence on the current customer bills.

Scotland

4.25. Under WICS's price review, the revenue that Scottish Water is allowed to collect is made up of four main building blocks:

- operating expenditure
- capital maintenance expenditure
- capital enhancement expenditure not funded through borrowing
- interest charges on borrowing.

4.26. Charge caps are set to match forecasted revenue and allowed revenue. Throughout the period, Scottish Water's financial strength is then monitored using a set of regulatory tools including financial ratios and tramlines. If financial ratios increase above a specified discussion line, excess outperformance is shared with customers; if they decline below a specified warning line, the company is required to put in place a plan to improve its financial position.

4.27. Operating and capital costs are mainly driven by the factors described at 4.16 and 4.17. With regards to financing costs, Scottish Water is a publicly owned company which does not pay dividends and only borrows from the Scottish Government. As a result, financing costs are generally lower and relatively more stable when compared to the water industry in England and Wales.

[71] Defra July 2015 'Cumulative impact of regulation & policy on future water bills' (p17) available at http://randd.defra.gov.uk

Regulatory intervention

4.28. The 'RPI – X' model of regulation limits price increases to RPI +/- X% for a fixed period (for water in England and Wales, this is five years). Any cost reductions made by companies within this period are either kept by the company or shared with customers, but at the end of the five years, the regulator can reset its expected costs to the efficient costs the company has revealed. In the Scottish water industry, price increases are limited to CPI +/- X% for a fixed period of six years.

4.29. In each price review, Ofwat and WICS build in an efficiency challenge for companies. This incentive to reduce costs helps to simulate competitive pressures and has an impact on long term bills. Defra estimated that this would reduce bills in England and Wales by about £55 between 2015 and 2050 (in real terms)[72].

4.30. These savings from cost efficiency depend on future price reviews and any future efficiency challenges which are not yet known. The reduction of £55 assumes a 1% annual efficiency saving during 2020-25 followed by 0.5% annual savings in subsequent years.

4.31. In the last two price reviews (from 2010 onwards), Ofwat introduced menu regulation. This incentivises companies to reveal their costs truthfully and then outperform the regulator's expectations on cost efficiency. Ofwat also introduced separate wholesale and retail price controls in 2015, aimed at making water company performance more transparent and driving efficiencies, with 'totex' (operating expenditure (opex) plus capital expenditure (capex)) cost assessment incentivising companies to consider more efficient ways of investing.

4.32. These price review measures combined are estimated to reduce household bills in England and Wales by about £6 by 2050. Future price reviews are likely to strengthen and introduce further incentives for efficiency, driving bills down further.

Sector-related policy

4.33. The European Water Framework Directive (WFD) is implemented through river basin management and planning. In England and Wales, the Environment Agency (EA) and Natural Resources Wales have oversight of this directive and is due to publish the second set of river basin management plans (RBMPs) in December 2015. The cost of compliance with the WFD falls mostly on water and sewerage companies, particularly for water and sewerage treatment. In Scotland, the Scottish Environment Protection Agency (SEPA) is responsible for overseeing the implementation of the WFD.

4.34. The costs of WFD compliance in England and Wales are expected to peak in 2017 at 2.6% of the average bill, and the costs are likely to fall mostly in the 2015-25 period. After this, costs will reduce over time. By 2025, the costs of WFD compliance will make up about 1.3% of water and sewerage bills

4.35. In 2014, the government consulted on abstraction reform. This could change the balance of who pays for abstraction and could affect water bills – though there are no legislative proposals yet and Defra analysis indicates that this may not lead to any noticeable impact on water bills. Water trading between companies may also increase and have the effect of reducing bills or damping any changes due to uncertainty in supply or increases in demand.

[72] Defra July 2015 'Cumulative impact of regulation & policy on future water bills' (p15) available at http://randd.defra.gov.uk

Market competition and liberalisation

4.36. In England and Wales, there is limited competition in the water sector. Although there are mechanisms for a limited number of customers to switch supplier, there is no active market. The Water Act 2014 enables market reform for non-household retail and in upstream (water resources and treatment) services – and the non-household retail market is due to open in 2017 in England. In Scotland, competition was introduced to the non-household retail market in 2008 and there will be a joint market between England and Scotland from 2017.

4.37. Non-household retail competition is expected to drive efficiency savings across the water and sewerage companies in England and Wales, resulting in a forecast reduction of £5 in household bills by 2050 (and a £27 average reduction in non-household bills).

4.38. Although upstream competition is not yet scheduled to open, this should remove existing barriers to entry and drive efficiency savings in likely future water and sewerage services. Analysis based on Defra's water bills model and assumption from Defra's impact assessment of introducing upstream competition (which assumes this market opens in 2020) suggests a reduction of about £27 in household bills by 2050[73]. There are currently no plans to introduce upstream competition in Scotland or Wales.

4.39. Market reform is likely to reduce household bills in England and Wales by about 1% by 2025, with the majority of the savings likely to come as the market matures over time. So it will have a relatively limited impact on affordability in the short term.

Demand developments

4.40. There are many factors that could influence the future demand for water and wastewater services, and this could make a difference for customers' bills. But this is difficult to quantify and long-term demand forecasts are inherently uncertain.

4.41. If water and sewerage companies need to build new water resources, treatment works or other infrastructure to meet water demand then the costs will be met by water customers through their bills. Companies publish Water Resource Management Plans (WRMPs) every five years which set out their forecast demand for the next 25 years – this is planned at a local level and will vary even within divisions of water company areas ('water resource zones').

4.42. Overall, the demand for water is likely to increase as the number of households increases, and therefore many companies will need to deal with this increased demand over the next 10 years. This does not necessarily mean building new supplies, and often means taking steps to reduce demand (such as installing water meters, encouraging water efficiency, or reducing leakage) instead if this is better value for money. The increased demand from consumers should be partially offset by the opening of the non-domestic retail market in 2017, which should drive reductions in commercial water use.

4.43. In the next five years, water and sewerage companies in England and Wales have committed to substantial demand reductions, for example, saving 370 million litres of water per day by tackling leakage and promoting water efficiency[74] and increasing the proportion of households with water

[73] Defra July 2015 'Cumulative impact of regulation & policy on future water bills' (p30) available at http://randd.defra.gov.uk

[74] Ofwat 2014 'Setting price controls for 2015-20 – overview'

meters from 52% to 63%. The reductions in demand from behavioural measures such as water meters will vary, but has been estimated at about 10-15% of average household demand[75].

4.44. Climate change is likely to have some impact on demand, with household demand forecast to increase by about 0.6% by 2040[76], but there is potentially a larger impact on water supply. The costs for climate change adaptation are included in the forecasts for future bills in the 'key cost inputs' section above, but these predictions are subject to a high degree of uncertainty. The climate change risk assessment carried out for Defra in 2012 suggested a 'high' scenario for water supply/demand deficits which would not be covered by the bill forecasts above.

4.45. Changes in demand are not likely to be a major driver of average water and sewerage bills over the medium term, as expenditure on supply or demand-side measures is offset by more households paying their bills. But as these pressures on supply and number of households vary between regions, this is likely to have different effects on the average bills in different water and sewerage company areas.

4.46. There is a trend for households towards having fewer occupants on average in future. This means that even a flat water and sewerage bill would mean a higher bill per person. Households with a single occupant use more water per person on average – around 181 litres per person per day, compared to about 151l/person/day for households with two occupants. Although this trend is taken into account in water resource management planning, this has different implications for affordability, that is, higher bills are likely to need to be paid for by households with lower than average incomes.

Technological change

4.47. Water and sewerage companies can make efficiencies through adopting new technologies or innovative approaches to carrying out their functions, particularly in water resources or water/sewerage treatment. This can include direct improvements such as new filtration methods or new desalination methods, and these savings are included in the 0.5%-1% annual efficiency assumptions in the 'regulatory intervention' section.

4.48. In particular, some companies now adopt smart metering – where meters can be read by a passing van or through the internet directly. This type of technology allows some direct efficiencies for water companies in meter reading costs, but can also be used to reduce costs by driving down demand through behavioural change. Metering can also help to identify leaks in customer supply pipes.

4.49. Consumer behaviour and fittings can also affect water usage. For example, new appliances tend to use less water and the standard maximum flush for new toilets has reduced from 7.5 litres to 6 litres since the 1990s, potentially reducing average water usage by up to 6%[77].

4.50. Despite these technological changes, there is unlikely to be a shift change in the water industry of the same magnitude as renewables in the energy sector or fibre in the communications sector, due to the nature of water and sewerage as physical products rather than technological products.

[75] Independent Review of Charging for Household Water and Sewerage Services, 2009
[76] UKWIR 2013 'Impact of Climate Change on Water Demand'
[77] Ofwat 2011 'Push, pull, nudge'

Relative impacts on different consumer groups

4.51. As discussed in previous sections, future water and sewerage bills are unlikely to change evenly across England and Wales, and some companies will need to invest more than others over the next 10 years.

4.52. The highest bills in 2014/15 were in the South West Water (£545), Welsh Water (£440), Wessex Water (£485) and Anglian Water (£431) regions. By 2030, the Defra model[78] estimates that Welsh Water (£520), South West Water (£507), Wessex Water (£462) and Thames Water (£412) could have the highest bills.

4.53. Affordability in each company area is also affected by the pace of metering[79]. Large households with a water meter are likely to have higher bills than if they were unmetered if the rateable value of their property is relatively low, and so areas with high levels of metering are more likely to have large families at risk of affordability problems. Areas with low metering are more likely to find affordability problems focussed on single occupant households paying relatively high unmetered bills if the rateable value of their property is relatively high.

4.54. Forecasts of average water bills and incomes do not necessarily apply equally to every household, and we can expect that this may change over time. Certain very large investment projects, such as the Thames Tideway Tunnel, may have distributional impacts, affecting consumers in certain geographic areas. Water and sewerage companies offer varying degrees of support to their customers, including social tariffs, which aim to reduce affordability problems. This is also likely to have an effect on future affordability.

[78] Defra July 2015 'Cumulative impact of regulation & policy on future water bills' available at http://randd.defra.gov.uk
[79] Ofwat 2011 'Affordability and debt 2009-10 – current evidence' http://www.ofwat.gov.uk/future/customers/metering/affordability/pap_tec201105affevid.pdf

5. Future communications services bills

Introduction

5.1. Ofcom is the regulator for fixed and mobile telecoms, broadcasting and postal services in the UK. Ofcom's principal duty is to further the interests of citizens in relation to communications matters and to further the interests of consumers in relevant markets, where appropriate by promoting competition. Ofcom is required to have regard to a number of matters in performing its duties including, of particular relevance to affordability, the needs of disabled people, the elderly and those on low incomes, and the interests of consumers more broadly in respect of choice, price, quality of service and value for money.

5.2. The structure and dynamics of the fixed and mobile communications markets are very different compared to those of the other regulated sectors covered by this report; not all communications services are consumed on a communal basis and there is competition at both the wholesale and retail levels. The key reasons for this include:

- the much greater scope for service differentiation in the digital communications sector, meeting diverse consumer needs and differing levels of willingness to pay
- the pace of technological development that plays an important role in maintaining the wide range of services and providers from which consumers are able to choose
- the continued expansion of the market which means that sector revenues can be increased, for example to recoup capital expenditure, without necessarily adversely affecting the price of essential services
- the vertical integration of major industry players that links networks and the services that use them.

5.3. Because capital expenditure from the private and public sectors is just one of the drivers of the price of services, including those essential ones examined in this report, it is therefore much more difficult to assess the future affordability of these services based on planned capex.

5.4. However, Ofcom does consider the affordability of services, especially essential services, to be an important issue and recognises that concerns in this area may arise for a number of reasons. Ofcom continues to undertake a number of initiatives in this area in accordance with its principal duty (summarised in the *Regulatory Intervention* section below).

Defining essential services

5.5. This section of the report examines the future drivers of the cost of essential services to consumers. For the purpose of this report 'essential' communications services are defined to comprise:

- basic fixed voice and data services
- basic mobile voice and data services
- second class postal services.

5.6. Ofcom research found that the most likely communications to be personally essential (defined as "a necessity in my day to day life") are mobile voice calls (46% consumers agreeing with statement),

mobile texts (45%), fixed broadband (40%) and internet via laptop / desktop (39%)[80]. There are variations by age group within these measures and therefore some services are seen as essential by certain groups and not others. In the interests of clarity, we focus here in the services seen as most important overall.

5.7. Within the postal sector, a second class service is deemed as essential. Research undertaken by Postcomm and Consumer Focus[81] showed that most consumers did not need their mail to arrive the next day, therefore applying a price cap to the first class service was not necessary. However, to ensure that a basic universal service is available to all and protect vulnerable consumers from ongoing price increases, applying such a cap to the second class service was appropriate.

5.8. Ofcom has excluded all television services from the analysis. Basic television services are not included as these are funded by the license fee (which is set by the government) or through advertising. The future prices of pay TV services are also not considered as part of this report, because subscriptions can be considered as discretionary spend above a basic tier level of free access (excluding the licence fee).

5.9. Views on which services are seen as essential vary by different consumer groups. These differences are not a result of geographical location per se, but rather due to underlying income levels and demographic profile. For example, low-income consumers are more likely to be mobile-only households and older consumers are more likely to be fixed-voice only households.

5.10. The existence of more vulnerable segments, in general lower-income and older consumers, underlines the importance of the 'social tariff' required by law to ensure a basic voice service is affordable for all consumers, as well as Ofcom's other consumer-facing interventions.

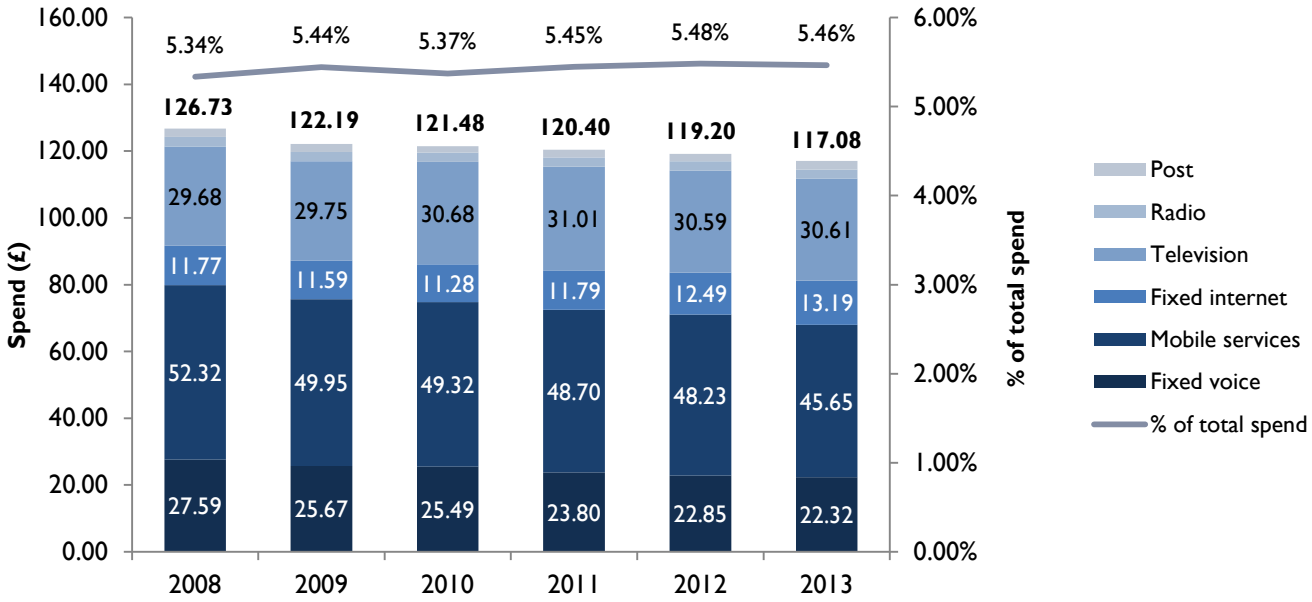
5.11. The communications market is characterised by a high level of dynamism thanks to the pace of technological development and rapidly changing demand levels. Therefore, services widely seen as essential today may not be seen as essential by as many consumers in ten years' time; similarly, services currently considered to be premium may become components of a set of basic services over the same time frame.

Assessing future affordability

5.12. Despite higher take-up and use of communications services, average household spend has continued to fall in real terms (i.e. when adjusted for inflation) over the last five years, as a result of effective competition in the market. On average, UK households spent £117 per month in real terms on communications services in 2013, just over £2 less than in 2012. At the same time, investment and innovation have delivered new networks and services that offer increased quality and choice to consumers.

[80] http://stakeholders.ofcom.org.uk/binaries/research/affordability/Essential_Comms_Services.pdf (Figure 11, page 12)
[81] Postcomm and Consumer Focus Nov 2010 'Residential customer needs from a sustainable universal service in the UK'

Figure 10: Average monthly household spend on communications services



Source: Ofcom / operators/ ONS
Notes: prices expressed in real terms (adjusted for CPI vs 2013)

5.13. However, while Ofcom is mindful of near-term pricing developments in formulating its strategy, it is not possible to provide meaningful quantitative analysis of the future prices of fixed and mobile communications services for a number of reasons:

- The retail prices of communications services are primarily not set by direct retail price regulation, but rather by the market as a result of competition (which policy seeks to promote including by wholesale level interventions).
- Third-party forecasts for the future pricing and affordability of communications services are not provided by the market.
- the drivers of future pricing are many and complex as described later in this chapter, resulting in greater uncertainty around future prices.

5.14. Ofcom does regulate the retail price of second class postal services through a 'safeguard cap' that is intended to ensure that consumers can access an affordable universal postal service.

5.15. This chapter focuses on fixed and mobile communications services, and focuses on a qualitative analysis of the drivers that could put upward or downward pressure on the cost of these services to consumers in future, and which could potentially have an impact on the affordability of these services:

- market competition and liberalisation (the main driver of pricing and capital expenditure)
- demand developments
- technological change
- communications providers' investment strategies (equivalent to 'key cost inputs' for the other regulated sectors covered by this report)
- regulatory intervention
- sector-related policy.

Market competition and liberalisation

5.16. The level of competition in the market is a key factor in determining prices in the communications sector. It has a direct effect on both the underlying price that a communications provider can charge for a service, and the level of investment industry players make in order to achieve a competitive advantage.

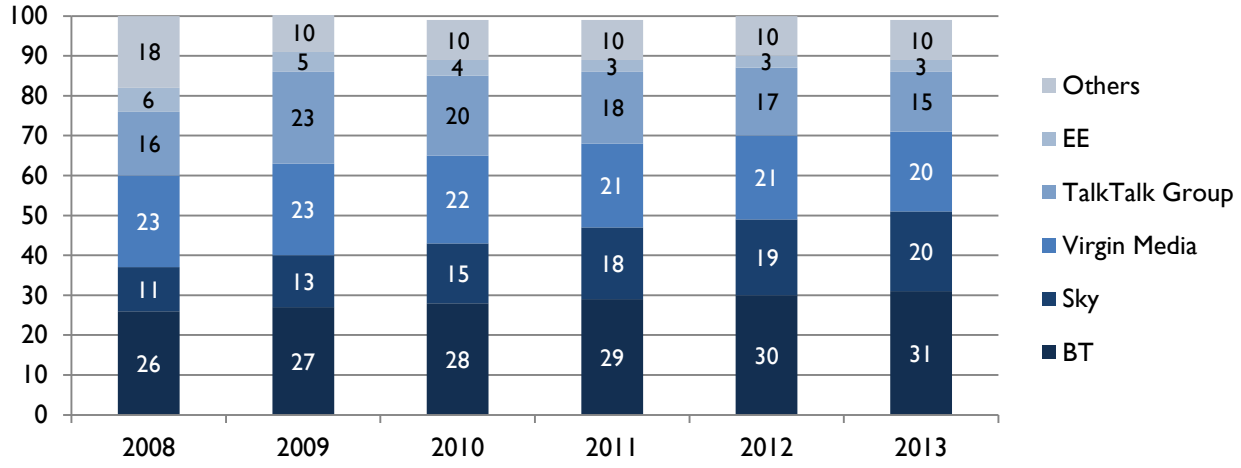
5.17. Operators seek to maximise their returns through both operating efficiencies and through maintaining and winning market share by competing on both price and the quality of the product. The greater the level of competition in the market, the greater the incentives for providers to maintain prices at a competitive affordable level.

5.18. As telecommunications operators continue to invest in new networks and services, Ofcom's regulatory approach is to ensure that competitive disruption and innovation – a feature of UK communications markets – can continue to exert downward pressure on prices.

5.19. At the retail level consumers are able to choose from a range of communications providers, with at least 12 major suppliers of bundled residential communications services, four major fixed-line operators and four national mobile network operators.

5.20. For example, in the fixed broadband market, although there has been some market concentration, there continues to be a number of scale competitors to the incumbent operator BT.

Figure 11: Retail residential and SME fixed broadband market shares



Source: Ofcom Communications Market Report 2014

5.21. In future, there are a number of ways in which changes in competitive dynamics could affect prices for essential services, including;

- Further market concentration or the loss of a disruptive player could result in an overall reduction in competitive intensity, which may give operators scope to raise prices across all products.
- A change in the focus of competition may mean that not all segments of consumers benefit from competitive pressure; for example, voice-only consumers may not benefit fully from the effects of competition focussed on bundled services.

5.22. Ofcom is mindful of the potential for a reduction in competition to create upward pressure on prices and will continue to use its sectoral and competition powers to respond effectively to any risks to effective competition as they arise.

Demand developments

5.23. The nature of future demand for communications services is inherently uncertain. The market is characterised by heterogeneous user needs and providers offer a range of different products and services to different segments of consumers. In addition, estimating the longer-term trajectory of demand for fixed and mobile bandwidth is difficult, given the changing technical requirements of services.

5.24. An example of this is the recent growth in consumer demand for mobile data, where the average data per connection doubled within the last two years from a flat user base. This is being driven by the increasing take-up of smartphones, tablets and other connected devices increases. As an increasing array of devices become more popular, more data use on mobile networks seems inevitable.

Figure 12: Mobile data use, per connection

	March 2011	June 2012	June 2013	June 2014
Active connections (millions)	81.1	82.2	82.7	83.2
Total data (GB, millions)	9.0	19.7	28.9	44.3
Data per active connection (GB per month)	0.11	0.24	0.35	0.53

Source: Ofcom Infrastructure Report, 2014

5.25. Increased demand and an expanding market are likely to result in reduced prices for consumers as communications providers are able to recover fixed costs from a wider customer base. However, a shift in demand towards new services may impact on the affordability of legacy services:

- Fixed costs for legacy services will be recovered from a dwindling customer base.
- There will be less competitive pressure to address this shrinking market.

5.26. This may particularly affect buyers of legacy standalone services as the market moves towards bundled service packages. There has been an increase in bundling as fixed-line, broadband and multichannel TV bundles continue to rise; the number of consumers with bundled services rose from 60% in 2013 to 63% in 2014. Looking ahead, bundling and discounting are likely to continue to be at the heart of retail propositions.

5.27. The communications sector is also seeing a broader shift from services provided solely through network operators towards an increasing use of over-the-top (OTT) voice and data services provided over the internet. These services are becoming increasingly important to consumers. OTT services, such as Skype, WhatsApp and Netflix can offer both cost and functionality advantages to users and can often be deployed more quickly than network-based services.

5.28. The increased use of such services may in part explain the trend towards price packages primarily based on data usage rather than leading with voice minutes or SMS messages. This may negatively

impact customers who rely more on voice / SMS services alone if the bundling of services requires them to pay for a service whether they use it or not.

Technological change

5.29. Communications markets are defined by cycles of technological change and this is likely to persist. Such changes tend to exert downward pressure on prices; new technologies have generally reduced the cost of services and grown the market through the development of new and improved services, resulting in lower prices for those that demand newer services.

5.30. One significant example of technological change is the transition from copper to fibre-based fixed access networks, which has underpinned a step change in the capabilities of broadband services. Since its introduction in 2010, superfast broadband services, delivered by mainly fibre-to-the-cabinet (FTTC) and cable, increased to reach over a quarter of all broadband connections by Q1 2014, without significant price increases for consumers.

5.31. In the short to medium term, continued technological change can be expected, underpinned by:

- continued consumer adoption of connected devices and online platforms
- the transition to the online delivery of content and services using IP-based architecture which offers communications providers a cheaper, more scalable route to consumers, driving down unit costs.

5.32. There are also likely to be longer-term changes, for example the shift from traditional PSTN networks to IP-based delivery of voice services. More broadly, the use of Voice over IP (VoIP) services continues to grow, with over a third (35%) of consumers using this method of communication in 2014.

5.33. Overall, Ofcom expects technological change to continue to increase the capacity and efficiency of telecoms networks. While this will increase the overall cost of data transfer across network, the expanding market and consequent higher data usage will mitigate against a proportionate increase in unit prices and may even realise greater economies of scale leading to lower prices for consumers.

5.34. Nevertheless, the migration to new technologies does create some risks in relation to the affordability of essential services for some consumers. As migration occurs to new technologies there are risks that the prices for users remaining on 'legacy' services will increase, as communications providers seek to recover fixed operating costs from a smaller base of users. Moreover, the consumers who are most likely to remain with 'legacy' services are unengaged consumers who are often elderly and on low incomes.

5.35. Ofcom recognises that some consumer segments may not benefit from technological upgrades and will take appropriate regulatory action to deal with any affordability concerns that arise in future.

Key cost inputs: communications providers' investment strategies

5.36. Total investment in fixed and mobile networks has been broadly flat over time. Variations in fixed investment are largely driven by the level of spend by BT as the largest player in the market, while mobile investment is split more evenly across operators.

Figure 13: Capex on fixed networks by largest network operators, 2007-14 (£bn)

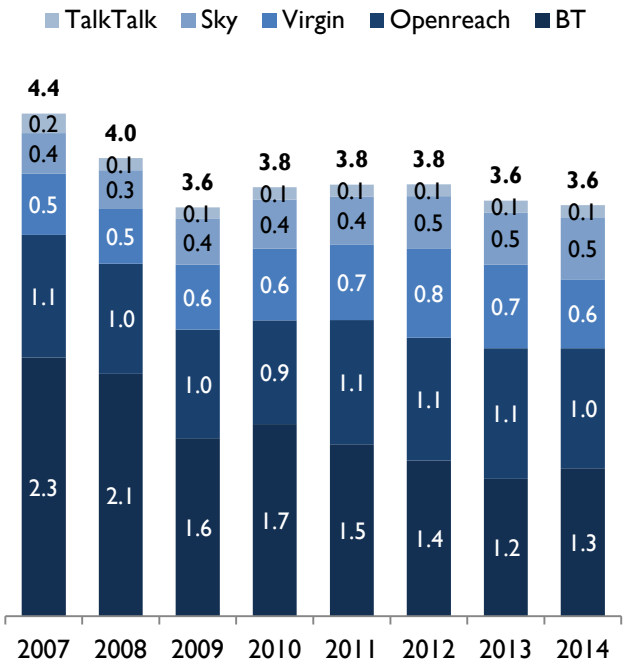
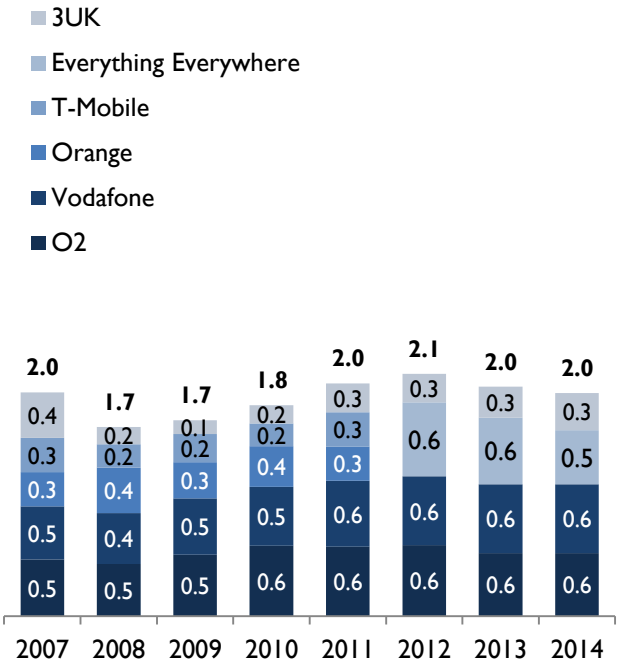


Figure 14: Capex on mobile networks by UK mobile network operators, 2007-14 (£bn)



Source: Company reports, Ofcom analysis
Note: mobile capex excludes O2 spend on 4G spectrum and Cable & Wireless spend attributable to Vodafone; where financial years do not match calendar years, results are listed under the year in which the FY began, e.g. FY2007-08 is listed as 2007.

5.37. The data Ofcom holds on future capex spend is not comprehensive and is subject to significant and short-notice change. However in the past decade there have been major capex programmes to fund fixed fibre broadband networks and 3G / 4G mobile networks. In the coming decade, Ofcom expects continued high levels of capex to extend these networks further, however there is much uncertainty about future levels of investment.

5.38. Even if there was to be any significant increase in levels of investment over this period, it is not clear that such a change would have a negative effect on the affordability of essential services. Future investment is likely to continue the trend of investment being generally focussed on developing network capacity to deliver new and better services, for example superfast broadband or 4G, rather than replacing existing capacity. This expands the market and allows operators to grow revenues from these new services.

5.39. This view that investment is focussed on areas other than those relevant to essential services is supported by the allocation of 2014 capital expenditure for the four largest fixed network operators, totalling £3.6bn, to new technologies, together with their known plans for the future:

- BT is investing heavily in its FTTC network. It has also announced that the next wave of investment will focus on ultrafast broadband using G.Fast technology.
- Virgin Media announced 'Project Lightning', which aims to extend the reach of the cable network from 13m to 17m homes by 2020 (59% UK premises coverage) with a total investment of £3bn.

5.40. The same is true for the four largest mobile network operators, whose capital expenditure for 2014 was approximately £2.5bn:

- Vodafone's Project Spring is a group-wide investment programme to improve its fixed and mobile networks across Europe, with overall investment of £20bn (£1bn in the UK).
- Everything Everywhere was the first operator to launch 4G services and continues to focus investment in this area, including in LTE advanced (4G+), already launched in some cities, increasing both capacity and speeds of mobile broadband.
- Looking further ahead, research is underway to establish the capabilities of future 5G networks, which could be available for deployment from 2020 onwards.

5.41. Furthermore, networks typically support a range of services, a significant proportion of whose build and operation costs are common, i.e. shared across multiple services, reducing the impact of any cost changes on individual services.

5.42. In addition, a combination of the lifecycle of products and pricing strategies by communications industry players means that the greater part of costs is likely to be recouped from active users of new services before being shared across other cost bases. Typically, but not always, prices for new communications services start high for early adopters who need no encouragement to purchase, are subsequently discounted to encourage scale adoption, and finally settle into a stable price structure in which profit can be made in a more predictable way.

5.43. This is in contrast to the other regulated sectors covered by this report, particularly the water and energy sectors, where there is a common service provided to all customers. Product differentiation, tiering and bundling are a significant feature of the communications sector.

Regulatory intervention

5.44. Ofcom's principal duty is to further the interests of citizens in relation to communications matters and of consumers in relevant markets, where appropriate by promoting competition.

5.45. In carrying out its duties under the Communications Act, Ofcom is specifically required to take account of particular groups of citizens and consumers who may be vulnerable to harm[82]. This includes having regard to the needs and interests of those who are disabled, elderly, on low incomes. Ofcom is also required to take into account the interests of consumers more broadly in relation to choice, price, quality of service and value for money.

5.46. Ofcom's overall approach to regulation is to enable market entry and stimulate effective competition, for example through the release of new spectrum or effective network access regulation. When implementing its approach Ofcom has a range of regulatory levers, both direct and indirect, which can be used to remedy competition concerns and ensure appropriate protection for consumers, including the affordability of essential services for vulnerable consumers. However, Ofcom aims to be proportionate in any regulatory intervention; the benefits of intervention to essential services must be balanced against potential detriment to other services and infrastructure.

[82] http://www.legislation.gov.uk/ukpga/2003/21/section/3

Fixed

5.47. Under the European Framework Ofcom conducts a three-yearly review of certain markets: Fixed Access, Wholesale Broadband Access, Business Connectivity, and Fixed Call Origination and Termination. These reviews examine the extent to which competition is effective and delivers good consumer outcomes.

5.48. Ofcom's broad approach across these markets is to ensure effective competition which can help consumers benefit from lower prices, greater choice, better quality services and innovation. To this end, Ofcom has powers to impose a range of remedies on communications providers with significant market power in order to secure effective competition, including;

- obligations on BT to supply wholesale services in regulated markets
- cost-based charge controls based on efficiency targets
- margin squeeze controls to promote downstream competition.

Mobile

5.49. Under the European Framework Ofcom conducts a three-yearly review of the market for mobile termination and has powers to impose price controls on wholesale termination charges. In addition, Ofcom licenses spectrum for mobile services and Ofcom has pursued a strategy that has maintained effective competition between 4 mobile network operators in the market.

5.50. Ofcom also introduced a minimum coverage obligation in one of the 800 MHz licences to ensure that a future mobile broadband service would be provided to a significant proportion of citizens and consumers.

5.51. In general, however, Ofcom considers the existing market with four mobile network operators to deliver good outcomes for consumers through effective competition, meaning that market power-based interventions are not currently appropriate.

5.52. In the event that merger and acquisition activity resulted in a potential reduction in the number of network operators, a further backstop is provided in that competition authorities would be required to ensure that there are no impediments to effective competition before approving the transaction.

Cross-market consumer action in telecommunications

5.53. As mandated by European legislation Ofcom requires the universal service provider to ensure that basic telephony services are provided at an affordable price to all consumers, which is achieved through a 'social tariff' for qualifying consumers.

5.54. Ofcom also requires that communications providers offer services for disabled consumers such as text relay for deaf people, free directory enquiries for blind people and priority fault repair for people who depend on the phone because of their disability[83]. It is unlikely that such services could be offered by the open market at an affordable rate.

[83] http://consumers.ofcom.org.uk/disability/disabled-people-and-communications-services/

5.55. Ofcom also requires (under the Universal Service Obligation) that consumers are given connection to landline telephone services on reasonable request at uniform prices, irrespective of geographical location[84].

5.56. Ofcom also has work underway on telecommunications debt. It requires providers of fixed voice services to act proportionately and not in an unduly discriminatory way when taking action for non-payment and encourages them to help consumers in difficulty in a number of ways, including:

- proactively engaging with consumers who have paid their bills late to discuss ways of optimising their account
- helping consumers to repay their debt through repayment structuring and referring them to debt advice agencies
- allowing customers to move to cheaper packages, amongst Ofcom's wider range of initiatives to help consumers switch when they want to.

5.57. More generally, Ofcom has initiatives to help consumers navigate the market, for instance consumer guides on managing communications costs or the call costs guide, and voluntary accreditation of price comparison sites to promote choice and switching[85].

Sector-related policy

5.58. There are a number of government and European public policy initiatives that may affect the future price of communications services. Whilst infrastructure expansion has required, and will continue to require, significant capital expenditure by the private sector, there are a number of public initiatives which provide funding, the costs of which are not likely recovered directly via consumer bills, but rather spread over the wider base of UK or EU taxpayers.

UK

5.59. In its Budget Statement 2015[86], the government pledged to take further action to support the delivery of broadband in rural areas, including looking to raise the Universal Service Obligation (USO) – the legal entitlement to a basic service – from dial-up speeds to 5 Mbps broadband. The government also proposed a range of other measures with industry and other bodies to secure wide rollout (including to rural areas) of superfast broadband and mobile services. In general, public spending on communications infrastructure is funded through general taxation, although it is possible that government will seek to recoup some expenditure from the users of communications services.

5.60. Despite a number of public expenditure initiatives being undertaken in the UK communications sector, in aggregate total public spending is relatively modest compared to other large infrastructure projects (e.g. HS2) and levels of commercial investment.

- Broadband Delivery UK (BDUK) administers £940m public funding on behalf of the Department for Culture, Media and Sport (DCMS) to address coverage issues and to deliver 'superconnected' cities.

[84] Oftel July 2013 http://www.ofcom.org.uk/static/archive/oftel/publications/eu_directives/2003/uso0703.pdf
[85] http://consumers.ofcom.org.uk/phone/finding-the-right-deal/managing-the-costs-of-your-communications/ and http://consumers.ofcom.org.uk/2009/10/how-much-does-a-phone-call-really-cost/
[86] https://www.gov.uk/government/publications/budget-2015-documents

- The Mobile Infrastructure Project is a government initiative to increase mobile coverage in areas that are currently poorly served. It is spending £150 million to deliver mobile voice services to areas not currently served by any network operator, and £150m has also been allocated to improve the quality and coverage of mobile phone and basic data network services.

- The Department for Transport (DfT) is working with Network Rail to improve mobile services on railways. The DfT is also planning to invest £53m to improve Wi-Fi access on trains.

Europe

5.61. In 2014 the European Commission published a draft Regulation on "measures to reduce the costs of high-speed broadband rollout". The Regulation was changed into a Directive and adopted earlier this year. It aims to increase the use of existing infrastructure by ensuring that communications providers have the right to request access to infrastructure owned by other telecoms providers and utility companies for the purpose of high-speed broadband rollout. The Directive is required to be transposed into UK law in January 2016 and to be implemented by July 2016.

5.62. In accordance with European legislation, Ofcom requires BT (and KCOM[87]), as the universal service provider, to ensure that basic telephony services are provided at an affordable price to all consumers. Its 'BT Basic' service[88] offers the following to people in receipt of certain state benefits:

- a low line rental fee of £15.30 a quarter, including £4.50 calling credit, with no minimum contract period

- broadband access for 10Gb data usage at up to 16Mb download speed for £4.85 per month, including BT Sports app and online player', unlimited WiFi, BT Parental Controls, 5GB BT Cloud and a BT Home Hub.

5.63. In 2013 the European Commission published a draft legislative package, *Connected Continent: Building a Telecoms Single Market*[89], which included proposals for net neutrality rules. Among the Commission's proposals were a prohibition on "discriminatory blocking and throttling" (not transmitting some content in favour of other content, and artificially varying the transfer speed for specific content), and rules for traffic management. This may affect prices due to the level of additional technological capability needed to implement such management practices, some of which may be allocated to essential services.

Post

5.64. In March 2012, Ofcom published its decision on the new regulatory framework for the postal sector. This granted Royal Mail significantly more pricing flexibility to help secure the ongoing provision of the universal postal service, subject to certain key safeguards.

5.65. These safeguards were introduced to help ensure all consumers can access a basic, affordable universal postal service. For example, Ofcom introduced safeguard caps on Second Class stamp Letters and Second Class stamp Large Letters and packets up to 2kg to ensure vulnerable consumers could afford a basic universal postal service.

[87] KCOM is the universal provider in Hull where it offers a social access package.
[88] http://www.bt.com/includingyou/other-products-services-bt-basic.html
[89] https://ec.europa.eu/digital-agenda/en/connected-continent-legislative-package

5.66. In general, Ofcom found that the overall spend on these services by consumers is sufficiently low that affordability issues do not currently arise.

5.67. As part of its duties, Ofcom will continue to monitor affordability through this general monitoring regime to track Royal Mail's performance. In particular, Ofcom will continue to carry out its tracker research for residential consumers and businesses to monitor post use, and to assess the affordability of universal postal services, value for money and satisfaction with post and postal prices.

Conclusions

5.68. Over the last decade communications prices have fallen in real terms. In the next few years investment in services such as superfast broadband and 4G can be expected to expand the market and drive incremental revenues through higher take-up and use of new and existing services. At the same time there is reason to believe that vibrant competition and ongoing – both features of UK communications markets – will continue to ensure efficient prices and preclude significant price rises without greater value being provided to consumers at the same time.

5.69. However, as described above, there some drivers which may have an adverse impact on the future affordability of basic communications services. There are a number of risks to affordability for different services, along with the potential market-led or regulatory mitigations.

Figure 15 Summary of key risks and mitigations for affordability of communications services

Comms sector	Risks	Mitigations
Fixed voice	Reducing competitive focus within the market Recouping of costs over a dwindling base	Competitive pressure from mobile voice and OTT service Regulatory levers on price Social tariff required by law to ensure a basic voice service is affordable for all consumers.
Fixed internet	Increased costs as a result of a new universal service obligation / commitment	Competitive pressure from cable and mobile networks Regulatory consideration of end user outcomes including price Potential for social tariff to be extended to broadband
Mobile telecoms	Reduced price competition in a consolidated market Lack of economy of scale in decreasing voice usage	Commoditisation of data Competition authority approvals for proposed mergers and acquisitions Competitive pressure from OTT services
All sectors	Lower levels of switching resulting in reduced competitive intensity	Regulatory intervention to protect vulnerable consumers Activity to promote switching amongst engaged and informed consumers Active engagement with communications providers on consumer issues
Post	Decreasing post volumes	Low spend by consumers on an individual basis Regulatory pricing levers

5.70. The affordability of communications services continues to be a core area of focus for Ofcom and it will continue to monitor market developments including through its annual Consumer Experience reports. If affordability concerns do arise, Ofcom will use its competition and consumer protection powers to ensure that that good quality, value-for-money services are available for all consumers and business across the markets that it regulates.

6. Future rail fares

Introduction

6.1. This chapter outlines how rail fares are regulated. It considers the impact of government policy and industry costs on fares, and outlines some of the factors that may affect future fares. We conclude by noting that fares are strongly affected by government policy. Over the longer term the affordability of rail services overall is affected by the efficient cost of running the railway, the cost-effectiveness of rail enhancement projects and investments, and the level of demand for services by passengers.

Characteristics of rail services

6.2. Rail has a number of distinct characteristics that affect how fares are set and the overall costs of the industry:

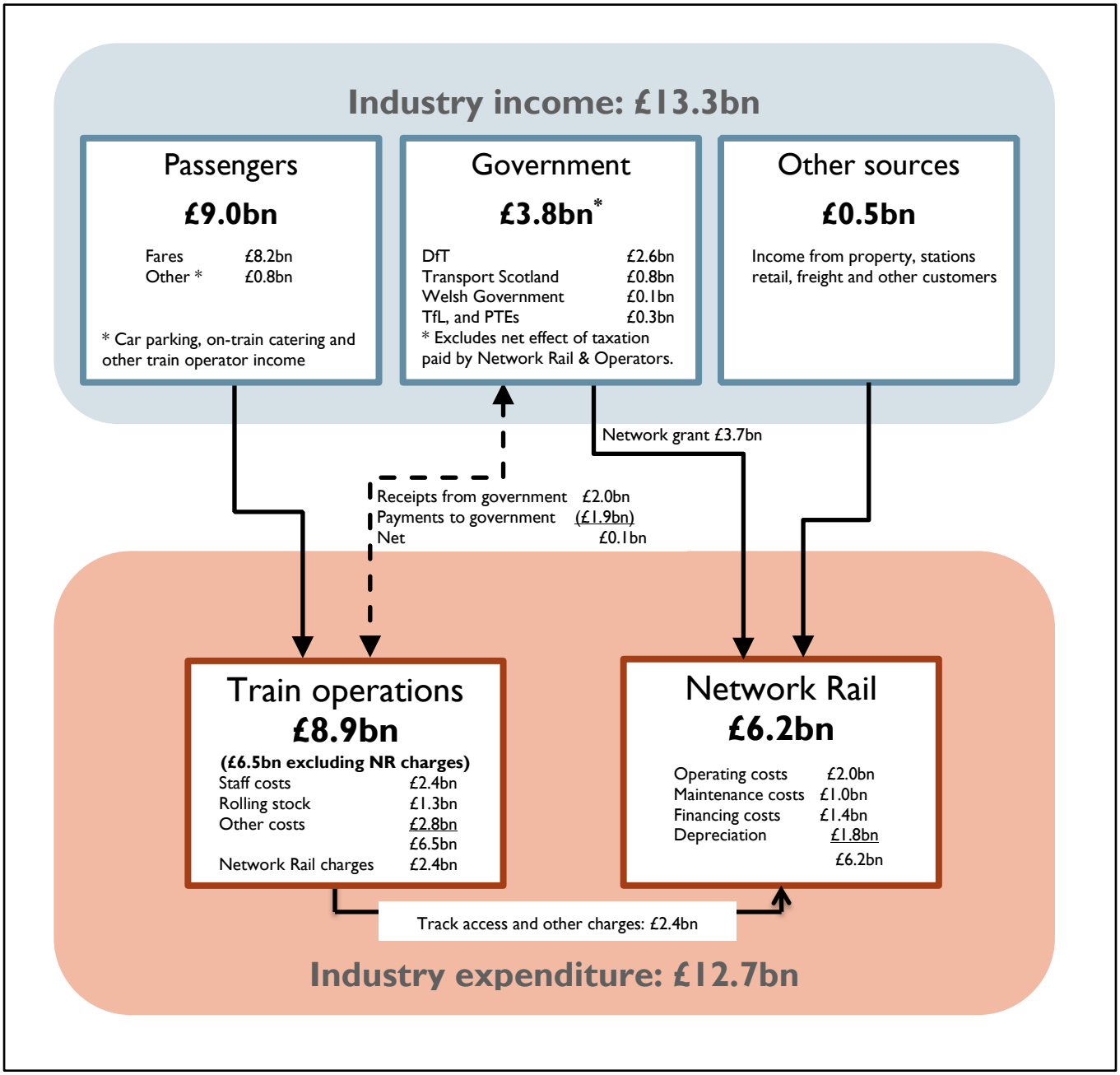
- Network Rail, which operates the bulk of the rail infrastructure, is publicly owned and financed, recovering part of its costs from charges to train operators but also receiving some public subsidy.
- The majority of passenger services are provided through a franchise, which is a contract between government and a train operator to provide services within a specific geographic area to a set performance standard, for example setting a minimum timetable of services.
- Retail competition is limited by the structure of franchised passenger services, for example it sets some obligations on the types of rail ticket that should be offered but also imposes a price cap on some types of fares.

6.3. These characteristics have two impacts. First, government decisions about the overall level of subsidy and the level of the price cap on certain rail fares directly affect the level of fares paid by passengers. Second, the costs incurred by Network Rail are not a direct influence on the level of regulated fares, as passenger fares are set according to a specific formula which adjusts fares overall by the RPI not directly with changes to network costs, albeit that industry costs affect the quality and cost of passenger services over time.

6.4. Figure 16, below, sets out sources of industry income and expenditure including government funding. For example, in 2013-14 there was £13.3billion income and the cost of running Great Britain's railways was £12.7billion as shown in Figure 16.[90]

[90] ORR Feb 2015 'GB rail industry financial information 2013-14' http://orr.gov.uk/publications/reports/gb-rail-industry-financial-information/gb-rail-industry-financial-information-2013-14

Figure 16: Industry income, expenditure and government funding in 2013-14



Source: GB rail industry financial information 2013-14, February 2015

Industry structure and regulation

6.5. This section briefly outlines the structure and regulation of the rail industry and explains how some fares are regulated.

Infrastructure operators

6.6. Infrastructure refers to the track, signalling equipment and civil engineering structures necessary to operate the rail network. Network Rail and High Speed 1 (HS1) operate the railway in Great Britain, providing services to passenger and freight train operators.

6.7. Network Rail and HS1 are both regulated by ORR, principally through price controls.[91] Network Rail's price control is set on a five year basis, with the current control period covering 2014-2019. The control period specifies the access charges Network Rail is permitted to recover from train operating companies and the levels of service its must offer, for example overall punctuality targets. The overall revenue required for Network Rail is calculated by reference to the efficient operating and capital expenditure that Network Rail is expected to incur over the control period. Similarly, HS1 is provided with incentives to reduce the cost of allowing access to its infrastructure and level of access charges. The price controls set by ORR have helped to achieve around 35 per cent efficiency savings since 2004-05 in the mainline rail infrastructure. This has reduced costs pressures on the day-to-day running of the railway.

Train operators

6.8. Train operator services and fares are regulated by DfT through their franchise agreements. As part of this franchise process, funders specify the passenger service requirements, as well as regulating some fares. Train operating companies (TOCs) receive income from train tickets, and incur costs operating and leasing trains and stations, and paying Network Rail to access the network. As part of the franchise process, profitable franchises make payments to the government, while some TOCs receive government support for services that funders specify where the revenue recovered through tickets does not recover the costs incurred to run that service. Periodic reviews and franchising are not aligned. A small number of services operate on an Open Access basis, and are not subject to fares regulation.

Regulation of rail fares

6.9. Train operators offer a number of different types of tickets to meet different needs, for example cheaper advance fares which are limited to a specific journey or annual season tickets. Train operators are free to set the level of some types of fares, including advance fares, first class, some off-peak fares and some anytime fares. However, certain types of fares are regulated by government through the franchise. Regulated fares include season tickets, some long distance off-peak return tickets and commuter fares (for major cities). Approximately 45 per cent of fares are subject to a price cap.

6.10. Fares are capped on the basis of a 'basket', which groups together similar fares. The government limits the overall extent by which the average fares in this basket may change. Before 2004, the government set regulated fares at the July RPI minus one per cent (resulting in below inflation rises). Between 2004 and 2013, the annual change in regulated fares was limited by the government at July RPI plus one per cent, leading to average fare rises higher than the rate of inflation. Since 2014, regulated fare increases were capped at RPI. In addition train companies were able to apply the 'fares basket' or 'flex' rules which permitted them to vary their increases. This was generally limited to five per cent but was reduced to two per cent for 2014 and was abolished for 2010 and 2015.

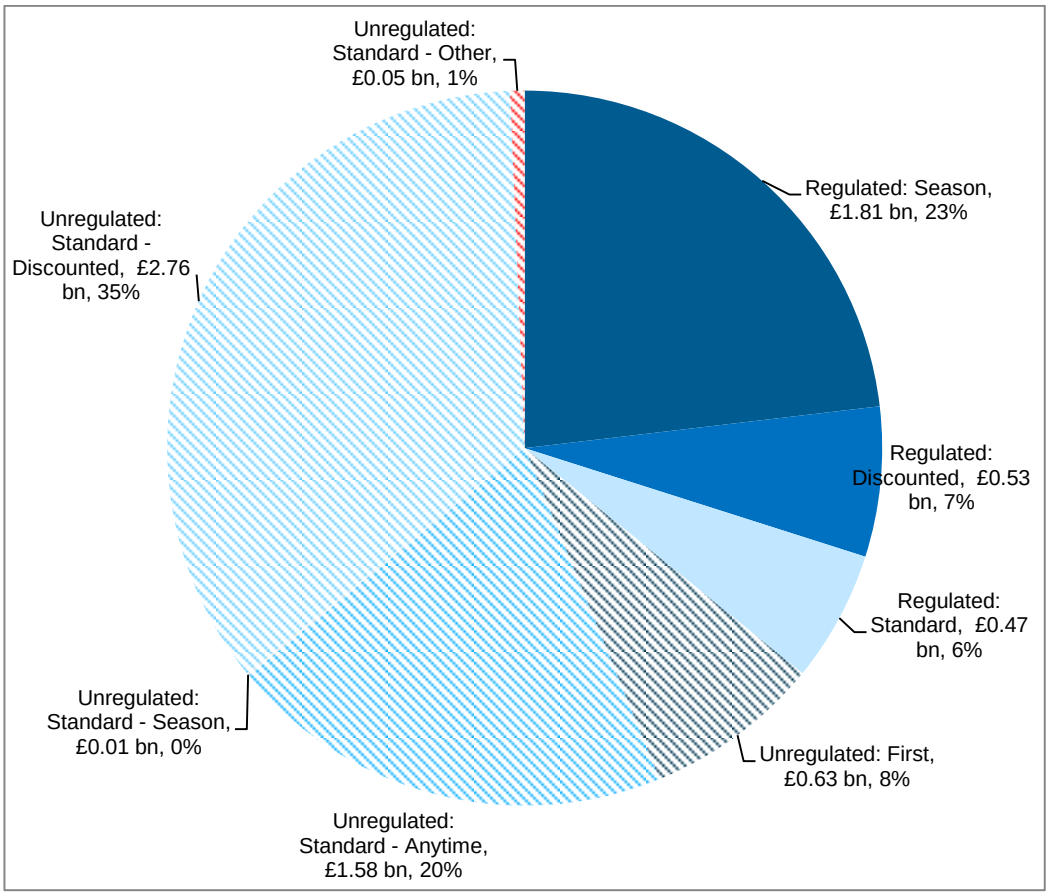
6.11. The government's policy is to keep commuter rail fares frozen in real terms for the next five years. This will mean that regulated fares will only be able to rise by RPI and train operators will not have any

[91] ORR also is the health and safety regulator for the rail industry as a whole – including mainline, metro, tramways and heritage railways across Britain. In addition, ORR has competition powers under Competition Act 1998, the Enterprise Act 2002 and under Articles 81 and 82 of the European Treaty to protect consumers and to prevent anti-competitive behaviour across the whole industry.

flexibility to raise ticket prices above this. The government also proposes to introduce smart ticketing and part-time season tickets and require train companies to improve compensation arrangements for passengers when trains are more than a few minutes late.

6.12. As shown in Figure 17 (below), the majority of income from fares came from passengers using unregulated fares (64 per cent) with the remainder (36 per cent) from regulated fares. However, less than half (48 per cent) of all journeys were covered by unregulated fares.

Figure 17: Contribution of regulated and unregulated fares to passenger income in 2014



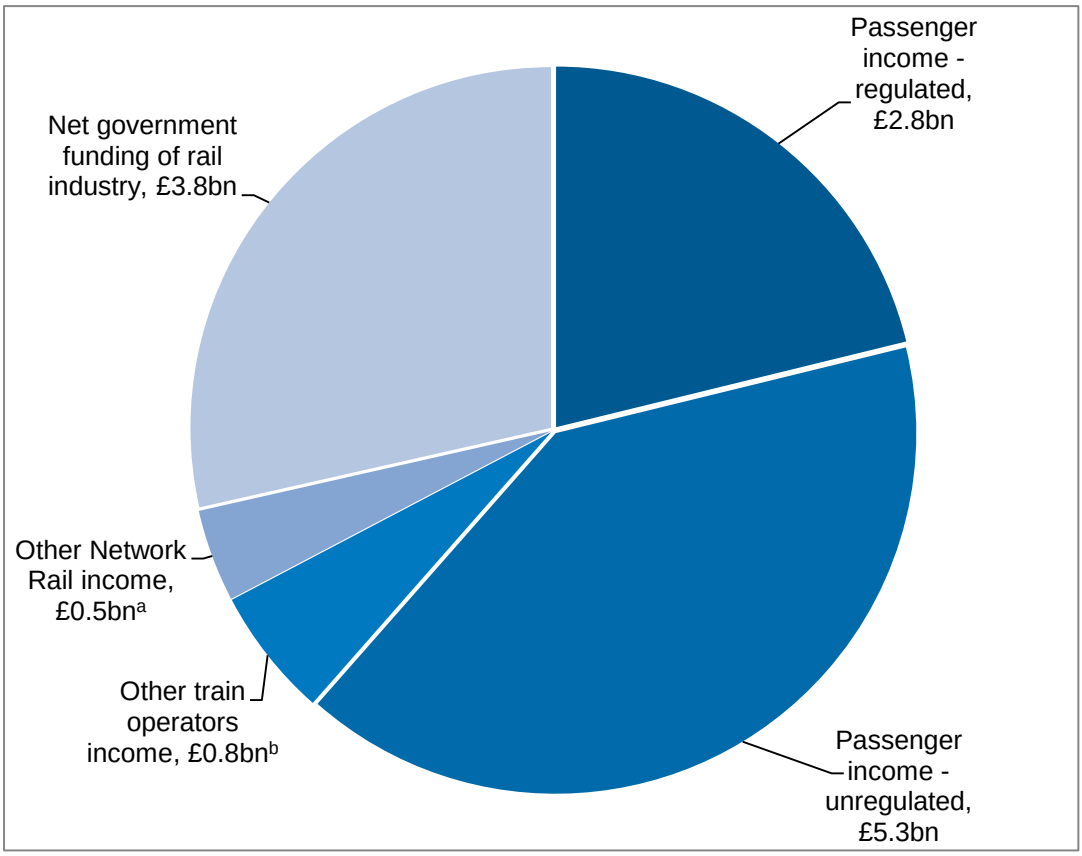
Source: GB rail industry financial information 2013-14, February 2015

6.13. During 2014, the largest share of passenger income came from unregulated discounted fares (35 per cent), followed by regulated season fares (23 per cent), unregulated standard anytime fares (20 per cent) and first class travel (8 per cent).

The impact of industry costs on passenger fares

6.14. At present, passenger fares meet about 61 per cent of industry costs (as shown in Figure 18). Over the long term, industry costs must be met by fares and by public funding. It is for government to decide on the balance between fares and subsidy. However, ORR plays an important role through its price controls, making the costs of infrastructure and day-to-day operation of the rail network more affordable.

Figure 18: Sources of industry income and passenger contribution in 2013-14

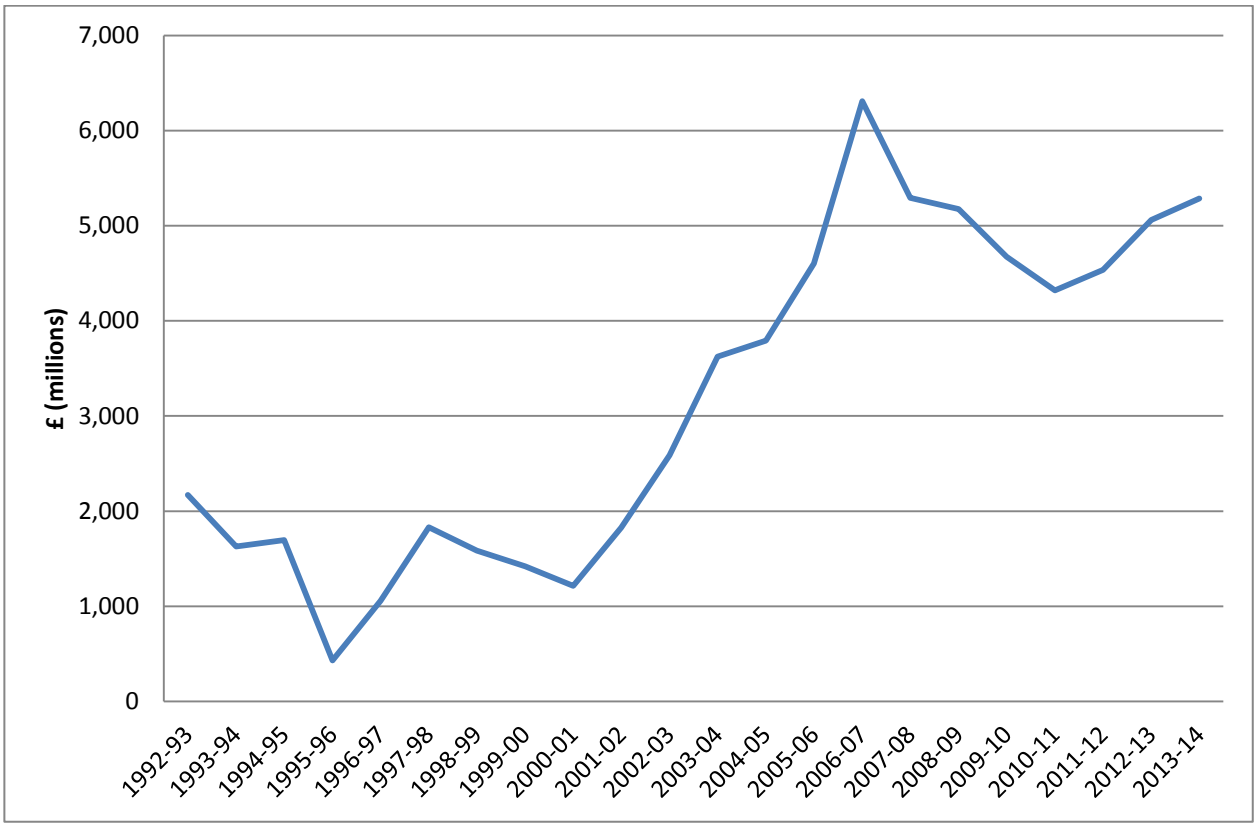


[a] Income from station retail outlets, property sales, freight and open access operators etc.
[b] Income from car parking, on train catering etc.

Source: GB rail industry financial information 2013-14, February 2015

6.15. In the last 20 years, the amount of government support has varied between less than £400 million up to £7.8billion, as illustrated in Figure 19 below.

Figure 19: Total government support to the rail industry (£ millions) including Passenger Transport Executives (PTE) grants 1992-93 – 2013-14



Source: National Rail Trends, Rail Finance Reports (Table 1.6)

6.16. Over the longer term it is unclear (as highlighted by Sir Roy McNulty's study of rail costs in 2013) whether this level of public support is sustainable and whether future governments will continue to invest in rail infrastructure to this extent. It is likely that the rail industry will not reach a position of being entirely self-financing in the foreseeable future. Apart from the need to pay for past investments, the government may want to make new strategic investments that the industry could not finance itself. The wider social and environmental benefits created by rail travel in reducing congestion and pollution and connecting communities means that the marginal cost of new investment often exceeds the marginal financial return generated.

Key factors affecting future costs and fares

6.17. Over the next ten years, a number of broader trends are expected to affect costs and fares in the rail industry. These include infrastructure developments such as Crossrail 1 and High Speed 2 (HS2), supply-side reform and competition and changes in demand for rail services.

Infrastructure developments

6.18. There is an ambitious programme of rail investment planned or underway. Network Rail has committed to a significant programme of investment, valued at £13 billion to be completed in the five years to 2019. In addition, the government is expected to support HS2 – the new North-South railway linking up London with the West Midlands. Crossrail 2 is being considered, providing a new rail route running through London and connecting Surrey and Hertfordshire.

6.19. These projects will need to be funded, which could increase pressure on either fares or government subsidies. However, alternative methods of funding may be available. For example, Crossrail 1 has raised a significant proportion of its income from business taxes locally and from local authorities; the Greater London Authority is expected to contribute around £4.1bn of its agreed contribution to the £15.9 billion Crossrail project using income generated from a new business rates supplement (BRS).[92]

Market competition and liberalisation

6.20. While the scope of on-rail competition remains limited in most areas, fare competition has been a feature of some fast-growing routes. Rail companies actively vary non-regulated fares according to the time of journey and when the ticket was purchased to compete with other modes, particularly with air and coach travel over long-distance routes. On the few routes where there is competition between franchised operators and open access operators, customers tend to report higher overall satisfaction.

6.21. Rail is at the heart of the European Union's transport policy and European influence is becoming ever more important for the future of Britain's railways. The Fourth Railway Package of the European Commission proposes the liberalisation of the domestic rail passenger services from 2019[93]. The state of play of this legal initiative is still open and negotiations are ongoing, thus making it difficult to predict the possible impacts for users, taxpayers and the workforce. The package aims at completing the single European rail area, opening the domestic passenger markets across Europe requiring member states to have mandatory competitive tendering procedures of public service contracts and enhancing the independence of infrastructure managers to ensure equal access to infrastructure.

Demand for rail travel

6.22. Rail demand has increased significantly in the last 20 years. In 2014-15, over 1.6 billion passenger journeys were made in Great Britain.[94] This increase has been driven by a number of factors, including changes in working and living patterns and greater frequency of services. The most recent UK forecasts were included in Network Rail's Strategic Business Plan which predicted a 16 per cent growth between 2014-15 and 2018-19. In the future, the likely drivers of demand include working patterns, town planning priorities and competition from other modes of transport.

6.23. Within the rail industry, technical developments may drive the affordability of fares in the immediate and long term. Specifically, more open access to rail fares data for third party app developers combined with development of electronic tickets, for example those stored on a smart phone, may enable passengers to identify more appropriate or cheaper fares to suit their journey. Future developments with ticket retailing may also enable passengers to benefit from the lower cost of some sales channels, for example by making purchases from ticketing websites.[95]

[92] Details about the GLA contribution for Crossrail – https://www.london.gov.uk/priorities/business-economy/vision-and-strategy/focus-areas/crossrail-business-rate-supplement

[93] EU 'Fourth Railway Package' is a suite of legislative proposals designed to create a single European rail market through the harmonisation of technical, legal and structural requirements and the removal of barriers to competition.

[94] The data used to derive passenger journeys are sourced from the LENNON database and train operating companies. For further details see ORR June 2015 'Passenger Rail Usage, 2014-14 Quarter 4, Statistical Release' http://orr.gov.uk/__data/assets/pdf_file/0005/18095/passenger-rail-usage-2014-15-q4.pdf

[95] ORR June 2015'Retail Market Review, Emerging Findings' http://orr.gov.uk/consultations/policy-consultations/open-consultations/retail-market-review

6.24. Shorter journey times may make rail more favourable compared to other modes of transport, reducing the cost of commuting for passengers compared to other modes of transport, while improved on-board Wi-Fi may stimulate demand by permitting passengers to work when they are travelling. The government has pledged to invest millions of pounds in fitting out trains with new Wi-Fi equipment and improving mobile phone signals, which will benefit passengers on trains across England and Wales.

6.25. However, improvements in communications technology potentially mean less travel as a high proportion of commuters will have the option of working from home for at least some of the time or may work a shorter working week. Some workers may be incentivised to make fewer journeys. On the other hand, households may choose to move to a transport corridor in which cheaper journeys are available, for example one served by low-cost commuter coaches.

6.26. Overall, the wide range of macro-economic factors that influence passengers' need to travel, there is considerable uncertainty around demand forecasts

Conclusion

6.27. Rail fares policy remains a matter for government and long term forecasting is difficult as increases (or decreases) in fares will depend on the policies and political priorities of governments. It is noted that the government has pledged to keep commuter rail fares frozen in real terms for the next five years. Despite this, it remains likely that rail fares will remain a mixture of regulated and unregulated fares. In the unregulated fares sector, train operators will continue to attempt to make rail fares attractive compared to other modes of transport. It is also possible innovations such as part-time season tickets and smart fares will dampen future price rises.

6.28. Over the longer term, industry costs affect the overall affordability of rail, whether paid by passengers or supported by tax payers. It is difficult to forecast whole-industry costs with accuracy over a ten year period despite considerable knowledge about the underlying cost drivers. This could be influenced by developments in Europe particularly the implications of the Fourth Railway Package. The rail enhancements planned by Network Rail are largely at the discretion of the government. As these are largely debt funded, they do not impact affordability of rail fares immediately, but the subsequent interest costs are recovered through the revenue requirement and, ultimately, rail fares.