Department of Energy & Climate Change

Estimated impacts of energy and climate change policies on energy prices and bills

November 2014

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Contents

List of acronyms

CCA	Climate Change Agreement
CCL	Climate Change Levy
CERT	Carbon Emissions Reduction Target
CESP	Community Energy Saving Programme
CfD	Contract for Difference
CHP	Combined Heat and Power
CLG	Communities and Local government
CPF	Carbon Price Floor
CRC	CRC Energy Efficiency Scheme
CSE	Centre for Sustainable Energy
DECC	Department of Energy and Climate Change
DIMPSA	Distributional Impacts Model for Strategic and Policy Analysis
DNO	Distribution Network Operator
DPCR	Distribution Price Control Review
DUKES	Digest of UK Energy Statistics
DUoS	Distribution Use of System
ECO	Energy Company Obligation
EEC	Energy Efficiency Commitment
EEP	Energy and Emissions Projections
EMR	Electricity Market Reform
EU ETS	EU Emissions Trading System
FIT	Feed-in-Tariff
GVA	Gross Value Added
IA	Impact Assessment
IEA	International Energy Agency
LCF	Levy Control Framework
NEED	National Energy Efficiency Data-framework
OECD	Organisation for Economic Co-operation and Development
Ofgem	Office of Gas and Electricity Markets
PRS	Private Rental Sector
RHI	Renewable Heat Incentive
RIIO	Revenue = Incentives + Innovation + Outputs
RO	Renewables Obligation
TNUoS	Transmission Network Use of System
WHD	Warm Home Discount

Ministerial Foreword by the Secretary of State

Energy is fundamental to our way of life – powering our appliances, heating our homes and businesses, running heavy industry, and keeping our transport moving. It is essential to our society and our economy that we ensure the lights stay on while reducing our dependence on imported energy and our vulnerability to volatile global fossil fuel prices. And we must do this while meeting our legally binding targets to tackle pollution and reduce the emissions that harm the planet.

While we are now turning around a legacy of underinvestment in our energy infrastructure as we move towards an energy secure, low-carbon future, we also need to recognise that in doing so there are costs to gas and electricity customers.

We are committed to being transparent with the public about the costs of energy policies. This document provides our latest analysis of the breakdown of energy costs for households and businesses in the UK, and the estimated impacts of energy and climate change policies on energy bills.

The largest portion of our bills is still the cost of producing gas and electricity. Our dependence on overseas energy supplies means that international factors beyond our control will drive these costs, which have been the largest component of energy bill increases in recent years.

The good news is that last year UK households paid the lowest retail gas prices in Europe and among the lowest retail electricity prices.

But the government recognises the pressures rising energy costs have been placing on household finances, which is why last December we announced a package of measures worth around £50 on average to households this year, committed that policy costs on household bills in 2015 would be no higher than they were last year, and, in July 2014, consulted ahead of a new strategy to tackle fuel poverty – the first for a generation.

Taken together, the impact of all the government's energy and climate change policies mean that household bills are currently around £90, on average, or six per cent, lower than if we just sat on our hands and did nothing. By 2020, the average impact is estimated to be broadly similar, around £92, or seven per cent, lower than otherwise.

This includes the impact of policies which deliver energy efficiency improvements that help people cut their bills by using less energy to keep warm and power their homes. And it includes the impact of long-term low-carbon reform of the electricity market designed to help bring forward the investment needed to replace ageing power stations, and move towards more climate friendly energy generation like renewables, nuclear, and carbon capture and storage.

We're doing everything we can to encourage people to take advantage of all the energy saving opportunities available and we are targeting support for those most in need – for example, the

Warm Home Discount supports around two million low income households a year with energy bill discounts.

We also want to ensure energy markets are working as they should, with competition driving down costs for consumers. We announced last year that there would be an annual assessment of the state of competition in energy markets. This year's assessment in March led Ofgem to propose referring some aspects of the market to the Competition and Markets Authority (CMA) for investigation. The CMA's investigation has now begun. We hope to see continued improvement in competition in the market.

There are now nearly three times as many independent suppliers as there were in 2010. We're making it easier and faster for households to shop around for the best deal by persuading energy suppliers to reduce switching times and enable 'one-click' price comparisons. Coupled with government action to promote collective switching and community energy projects, the range of choice for consumers is growing all the time.

Business energy bills have been increasing in recent years mainly due to rising wholesale energy and network costs. While energy costs represent less than three per cent of total costs for the manufacturing sector, there is a small section of energy intensive industries facing strong international competition. Nothing would be gained from forcing these industries, jobs, and emissions abroad. That is why the government has introduced a number of measures to help limit the costs for those electricity-intensive users most at risk while lower carbon, more energy efficient infrastructure is developed – these will reduce the impact of policies on eligible industries by up to around 80 per cent in 2020, subject to State Aid approval.

We are acting through the energy market, through energy efficiency, and through investing in new technology to keep bills down in the long-term. In doing so, we are keeping the lights on, keeping our economy moving, improving our country's energy supplies, reducing our carbon emissions, reforming the energy market so that it works in favour of consumers, and helping those in society who need it most.

Ministerial Foreword by the Parliamentary Under Secretary of State

We are more committed than ever to helping families with the cost of their energy bills.

We are taking a long-term approach to addressing the costs on energy bills that we can control: the costs of energy and climate change policies. We have done this by setting a cap on our budget for low-carbon support through the Levy Control Framework to 2020, we have delivered a package of measures worth £50, on average, to households this year, and we have announced a package of support to limit the costs of our policies on the most at risk energy intensive industries.

But working with consumers to help them take advantage of energy efficiency opportunities, and switch energy tariffs and suppliers – is also essential to keeping bills down. Through our ambitious energy efficiency strategy we are taking action to help households use less energy but have warm and comfortable homes. Tackling needlessly cold and draughty flats and houses will greatly enhance the quality of life and cut the energy bills for millions of people in the UK. And we're also supporting businesses to reduce their running costs by enabling them to get access to bespoke information on cost-effective energy efficiency investment.

Insulated homes with efficient, well-controlled heating can help bring an end to energy waste and rising energy bills. Households can save between around £30 and £300 a year off their heating bill from installing an insulation measure and we are determined to drive take up of measures. As at the end of August 2014, around 770,000 homes have had measures installed under the Energy Company Obligation since the scheme began, including vulnerable households. We are on track to treat 1 million homes through ECO and the Green Deal by March 2015.

We are also helping people to get the best deal they can from their energy supplier. We have supported Ofgem's reforms to make it easier for households to switch quickly and smoothly. Someone who has never switched can save around £200 from switching suppliers, and nearly 260,000 customers switched electricity supplier in September alone – with almost half of those switching to an independent supplier. And we are working with energy companies to cut their switching times in half by the end of 2014 from 5 weeks to 2 and a half weeks – with the ultimate goal of 24 hour switching.

Smart metering will be key to next day reliable switching and, more broadly, will put power into people's hands, bringing an end to estimated billing, and helping everyone understand their energy use and choose the right energy supplier for them. Our smart metering rollout is one of the largest energy infrastructure programmes with 30 million homes and SMEs to receive smart meters by 2020.

We are pressing forward with our proposals to enable consumers to download key energy data such as their annual consumption and tariff name to help find the cheapest energy deal based

on their circumstances, through the midata programme, and requiring machine readable images (such as QR codes) on consumers' bills. Legislation will be in place by the end of the year and we will be seeing QR codes on consumers' bills as soon as possible thereafter.

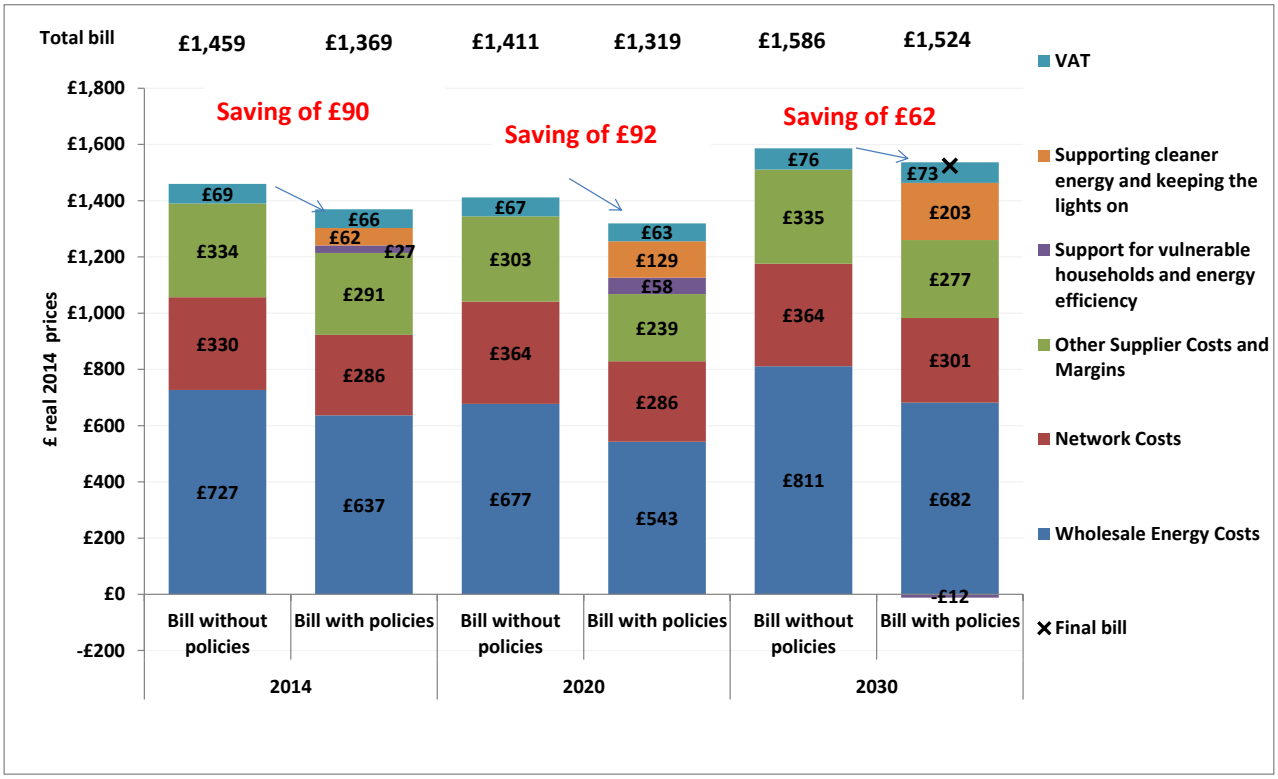
To help those that need it most, we have provided nearly £2m over two years for the Big Energy Saving Network; a programme to bring together community level organisations and consumer groups to deliver targeted outreach that helps vulnerable people get the best deal.

So we are helping to put people in the driving seat, helping them understand the tariff they are on, and having clear information about their energy use. These are the first steps in moving consumers to being active market participants that understand how much energy they use, make the most of opportunities to reduce the amount of energy they need to heat their homes, and ensure they are on the best tariff for them by switching tariff or supplier, which will boost competition and put downwards pressure on bills.

Executive summary

1. The government is committed to being open and transparent about the impacts of energy and climate change policies on household and business energy costs, now and into the future.
2. **The UK currently ranks well in Europe for household energy prices** – In 2013, UK households paid the lowest gas prices and fifth lowest electricity prices in the EU 15.
3. **Household energy bills are estimated to be, on average, around £90 (6%) lower in 2014 than they would otherwise have been in the absence of all policies** – On average, the cost of supporting home-grown, low-carbon sources of energy accounts for 5% of a household energy bill, and the cost of supporting investment in energy efficiency and providing help to vulnerable households net of the Government Electricity Rebate accounts for 2-3%. The total share of policy costs on an average household energy bill is estimated to be lower this year than for 2013. These costs are also, on average, estimated to be more than offset by the bill savings from energy efficiency policies – household sector gas use is around 10% lower this year than it would have been, and electricity use around 17% lower, as a result of energy efficiency policies, such as the Energy Company Obligation (ECO) and its predecessor policies, and EU-wide minimum standards of efficiency for appliances, electronics and other energy using products in the EU (Products Policy).
4. **Households that take up insulation measures or receive a Warm Home Discount will benefit the most, but even those households who do not receive such measures stand to benefit:** Products Policy and Boiler Regulations remove the least efficient products from the market, meaning that energy efficiency improves through natural replacement, and the roll-out of Smart Meters will enable households to make more efficient energy consumption decisions.
5. **The 2014 household bills presented in this report also reflect the package of measures for household energy bills announced at the last Autumn Statement and worth around £50 per household in 2014** – This includes changes the government has announced to the ECO scheme and a £12 rebate to be paid to household electricity customers in 2014 (and 2015). It also includes a voluntary deferral of, on average, £5 in electricity distribution costs by Distribution Network Operators (DNOs).
6. **By 2020 the average net impact of policies on household energy bills is estimated to be a saving of around £92 (7%) (Chart 1).** Although the cost on bills of supporting investment in low carbon technologies is expected to increase, the savings from energy efficiency policies are also expected to increase - as a result of policies, household sector gas use is estimated to be around 14% lower and electricity use around 29% lower in 2020 compared to what it would have been in the absence of policies.

Chart 1: Estimated household energy bills with and without policies[1] (See footnote for 2030)



Source: DECC 2014

7. These impacts reflect the average across the household sector but, in fact, no two households are the same, and so policy impacts will vary across the household distribution: **Poorer households typically spend more of their total expenditure on energy, but are also more likely to be eligible for support through policies**. Our distributional modelling shows that households at the bottom of the expenditure distribution are expected to see the greatest proportional reduction in energy bills, on average, as a result of policies.

8. **Business energy bills are estimated to be higher in 2014 as a result of energy and climate change policies** by 11% for small businesses, and 28% for businesses that are medium users of energy (and within the CRC). For the majority of business, energy costs form a small proportion of total operating costs (around 3% overall), and the impact of policies is estimated to contribute to around 1% higher operating costs overall.

9. For energy-intensive industries (EIIs), energy costs form a significant proportion of total operating costs and can have implications for international competitiveness. The UK currently ranks well in Europe for industrial gas prices but less well for industrial electricity prices. Recognising this, **the government has introduced a number of measures to help limit the impact of policies on energy-intensive industries** – these will reduce the impact of policies on the energy bills of eligible EIIs by up to around 80% in 2020, subject to State Aid approval.

10. The main analysis in this report is based on DECC's 2014 central fossil fuel price scenarios. If fossil fuel prices were to rise faster and further than the central projections, the impact of policies on businesses will be reduced and the benefits for households increased as government policies help to protect consumers from rising fossil fuel prices. However if fossil fuel prices were to fall, the benefits of policies would be lower and the costs greater.

[1] As noted elsewhere in the report, the 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 (2023-27) and beyond.

Introduction

11. The government is committed to maintaining secure, affordable supplies of energy at all times, and to do so while meeting the UK's legally binding emission reduction targets. Policies which help deliver against these goals will have both costs and benefits for households and businesses through the energy prices they pay and the amount of energy they use, and these impacts can vary significantly across these sectors.

12. This is why the government is committed to being open and transparent about the impacts of policies on the costs of energy for households and businesses now and into the future. The analysis in this document focuses on the impact of these policies on gas and electricity bills. It updates analysis published in March 20132 for the latest technical assumptions and policy decisions.

13. The report shows that the average cost of policies on household energy bills is estimated to be more than offset by energy efficiency savings from policies in 2014, 2020 and 2030. It demonstrates the impact of measures announced last December to reduce the costs on household energy bills by, on average, £50 this year compared to what they would have been. It also shows how measures to help energy intensive industries will reduce the impact of policies for eligible users by up to around 80% in 2020, subject to State Aid approval.

14. The report is structured as follows:

- **Chapter 1: Recent developments in UK energy prices and bills** – Recent trends and drivers of UK energy prices, consumption and bills.
- **Chapter 2: International comparisons** – A comparison of UK retail gas and electricity prices with EU15 and G7 countries.
- **Chapter 3: How policies impact energy bills** – An explanation of how policies impact bills and a high level explanation of our analytical methodology.
- **Chapter 4: Household energy bills** – The results of analysis estimating the impact of energy and climate change policies on household energy bills in 2014, 2020 and 2030, including how they vary across the household distribution.
- **Chapter 5: Business energy bills** – The results of analysis estimating the impact of energy and climate change policies on energy bills paid by small, medium and large energy-intensive business users in 2014, 2020 and 2030. This section also presents the impact of the government's measures to reduce policy impacts on the energy bills of the most energy intensive users.
- **Chapter 6: Uncertainties and Sensitivity analysis** – Analysis under different fossil fuel price scenarios.

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[2] Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/172923/130326_-_Price_and_Bill_Impacts_Report_Final.pdf.

1 Recent developments in UK energy prices and bills

Summary

- Wholesale energy costs, which make up around half of a household energy bill, are estimated to have contributed between around 56% and 71% of the increase in household energy bills between 2010 and 2013.[3]
- By contrast, government policies have helped reduce the amount that bills have increased.
- The cost of supporting home-grown, low-carbon sources of energy accounted for around 5% of the increase, while the cost of supporting investment in energy efficiency and providing help to vulnerable households has been broadly flat over this time, contributing towards none of the increase in bills overall over 2010 to 2013.
- However, on average these policy costs have been more than offset by savings in household energy consumption from energy efficiency policies.
- It is less straightforward to consider trends in business energy bills due to the diversity of the non-domestic sector. However, savings from policies such as minimum standards of efficiency for energy-using products (Products Policy), Carbon Trust measures, and the Energy Performance of Buildings Directive have helped to reduce consumption compared to what it would have been without policies.

1.1 Retail energy price drivers

15. Gas and electricity prices paid by households and businesses (retail energy prices) are made up of a number of components: wholesale energy costs, network costs, supplier operating costs and margins, the costs of energy and climate change policies and VAT (for households only, at a reduced rate of 5%).

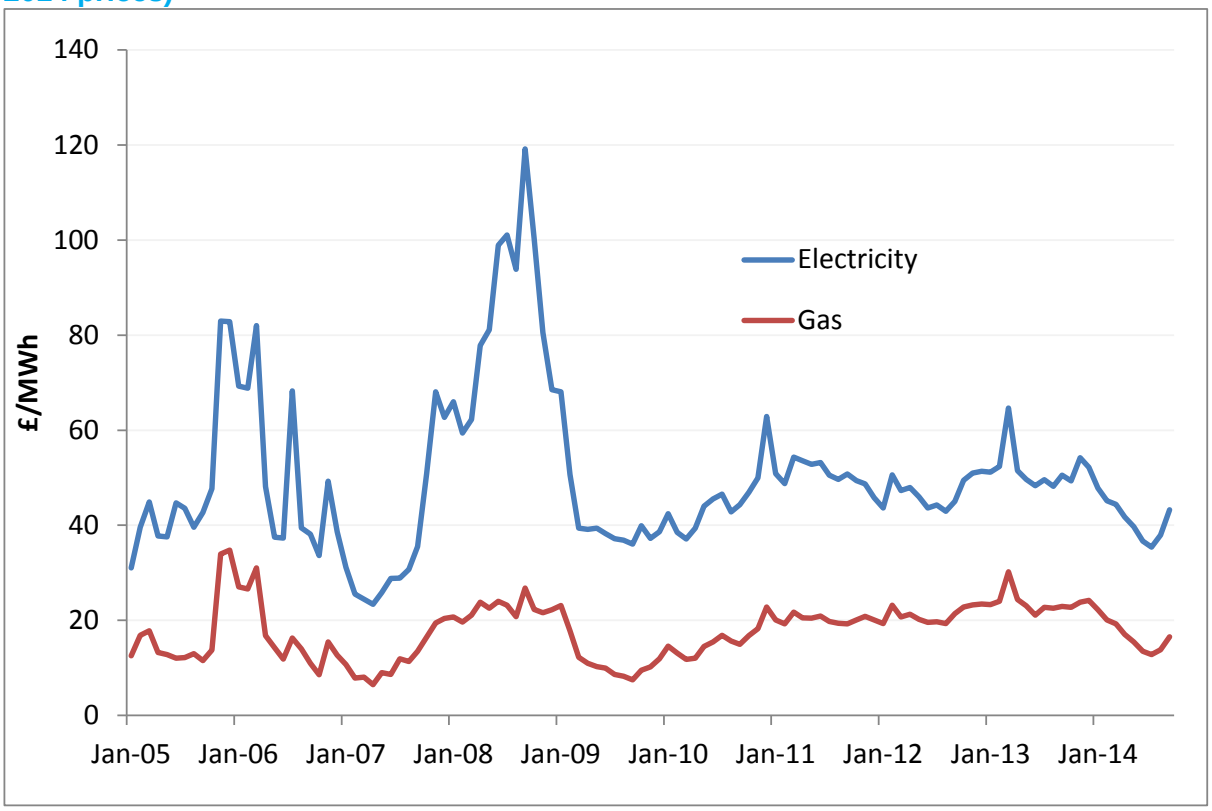
[3] The range reflects uncertainty around historic components of the price, including historic supplier costs and margins, discussed later in the chapter.

Wholesale energy costs

16. **Wholesale energy costs, which make up around half of a household energy bill, have been the main driver of increases in energy prices and are estimated to have contributed between around 56% and 71% of the increase in household energy bills between 2010 and 2013**.[4]

17. Wholesale prices of gas and electricity increased by 104% and 58% respectively (real terms) between 2005 and 2013.[5] Wholesale prices have been volatile over the past decade (see Chart 2), with trends largely reflecting movements in international fossil fuel prices. In general, wholesale electricity prices have moved with gas prices because the marginal (price-setting) generation plant is usually gas-fuelled although, historically, there have been some instances overnight when it is has also been coal.

Chart 2: Day-ahead gas and baseload electricity wholesale prices (monthly averages, £/MWh, 2014 prices)



Source: Gas data from ICIS Heren, Electricity data from Marex Spectron

18. In order to reduce the effect of volatile wholesale prices on their business, energy suppliers typically purchase their energy over a period of time (generally up to 24 months) ahead of delivery to the final customer. This practice is known as hedging. As a result of purchasing energy in this way, the price energy suppliers charge consumers is less volatile than if they did not hedge.

[4] Source: DECC analysis

[5] Estimated increase is from average 2005 price to average 2013 price.

19. Similar to prices in the household sector, retail prices in the non-domestic sector are also driven heavily by movements in wholesale prices. However, industrial users more typically purchase energy under flexible price contracts where end-user prices move more closely (and more regularly) with movements in wholesale prices – i.e. there tends to be less hedging of supplies to larger customers than in the household sector.

Network costs

20. **Gas and electricity transmission and distribution costs (or network costs) are estimated to account for, on average, around 21% of household energy bills in 2014, and are estimated to have contributed to around 21% of the increase in household energy bills between 2010 and 2013**. Of total network charges paid by households, distribution accounts for the majority of costs (over three quarters for both electricity and gas).

21. Between 2003/04 and 2014/15[6] average gas transmission and distribution charges paid by households increased from around £0.7/MWh and £6/MWh to £0.9/MWh and £9/MWh respectively (2014 prices).[7] The increase in gas network charges largely reflects an on-going programme needed to meet growing gas demand, and costs of replacing aging infrastructure. Other factors have also contributed, including new initiatives to stimulate innovation. Whilst revenues[8] have been more stable since 2008, a reduction in non-domestic gas use due to the economic downturn has meant a higher proportion of revenues have been recovered through the domestic customer base.

22. Over the same period average electricity transmission and distribution charges paid by households have increased from around £3/MWh and £22/MWh to £9/MWh and £28/MWh respectively.[9] The increase reflects investment needed to replace aging infrastructure (much of which was built in the 1950s and '60s) that has reached the end of its useful life as well as to connect new generation and demand. Planned increases in expenditure were agreed through the regulatory price control process. The unit cost increase also reflects a reduction in demand and hence a lower energy usage over which to recover costs. These increases were tempered by improved network efficiency which has driven significant reductions in network companies' allowed revenue; from 1990 to 2010 allowed revenue declined by approximately 60% in electricity distribution and 30% in electricity transmission.[10] Distribution charges are now expected to remain broadly flat, while transmission charges are expected to slightly increase to 2030. For more information on electricity networks, see Annex A.

23. The current price controls for gas distribution, and gas and electricity transmission were recently agreed and run to 31 March 2021. The current price control for electricity distribution runs to 31 March 2015. The process for agreeing the next electricity distribution price

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[6] Network charges are set on a financial year basis.

[7] The trajectory of network costs faced by businesses is assumed to be broadly similar but the absolute levels will generally be lower due to economies of scale and other factors which imply lower per unit network costs for these users.

[8] Revenues are the amount network companies are permitted to recover during a price control period to pay for historic investment, as well as the day to day operational and repair costs incurred for maintaining the networks. It is allowed revenue which impacts on consumer bills during a given price control period.

[9] Current Network charges are from Ofgem's Supply Market Indicator analysis. Network charges disaggregated into distribution and transmission were provided directly by Ofgem.

[10] Source: Ofgem evidence to Energy and Climate Change Committee April 2014.

control, which runs from 1 April 2015 to 31 March 2023, is in the final stages, with Ofgem scheduled to publish its final determination of DNO Business Plans in November 2014.

Supplier costs and margins

24. **Supplier operating costs and profit margins are estimated to account for around 21% of household energy bills in 2014.[11] Energy suppliers face costs of serving customers, metering, billing and managing debt.[12] The average margin (net of operating costs) made by large suppliers on their domestic supply business varies year on year. In 2010, the average net margin was around 3% and in 2013 it had risen to around 4%.[13]**

25. **Overall, supplier costs and margins are estimated to have accounted for between around 2% and 18% of the increase in household energy bills between 2010 and 2013.[14]**

26. Improved energy market competition can act to reduce this element of the bill. DECC and Ofgem have introduced a number of reforms aimed at stimulating competition in energy markets (e.g. Ofgem's Retail Market Review, Ofgem's reforms to improve liquidity in wholesale markets and the action government has taken to reduce barriers to growth and entry in the retail energy market), and DECC has also pushed for reduced switching times. These will be halved by the end of the year, and our ambition is to reduce this still further, to 24 hours.

The impact of energy and climate change policies

27. **The average net impact of policies between 2010 and 2013 has been to reduce bills.** The cost of supporting home-grown, low-carbon sources of energy is estimated to account for around 5% of household energy bills in 2014, and is estimated to have accounted for around 5% of the increase in household energy bills between 2010 and 2013. The cost of supporting investment in energy efficiency and providing help to vulnerable households net of the Government Electricity Rebate is estimated to account for 2-3% of bills in 2014, and have remained broadly flat over this time, contributing to none of the increase in bills between 2010 and 2013. However, these policy costs are estimated to have been more than offset by lower consumption as a result of policies[15] – (see next section).

1.2 Household energy consumption and bill trends

28. While household energy prices have risen over the last decade, average energy consumption per household has fallen.[16] This has helped offset the impact of some of the price rises and reduce the potential rise in energy bills.

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[11] Source: Ofgem Supply Market Indicators

[12] Note that the costs and savings associated with smart meters are for the purposes of this analysis accounted for within the policies category of the bill breakdown.

[13] Source: Consolidated Segmental Statements. This is the average domestic supply margin based on the six largest energy companies.

[14] Source: Ofgem Supply Market Indicator (higher end of range) and Consolidated Segmental Statements (lower end of range).

[15] This statement isolates the impact on consumption from energy efficiency policies from other drivers of consumption – see next section.

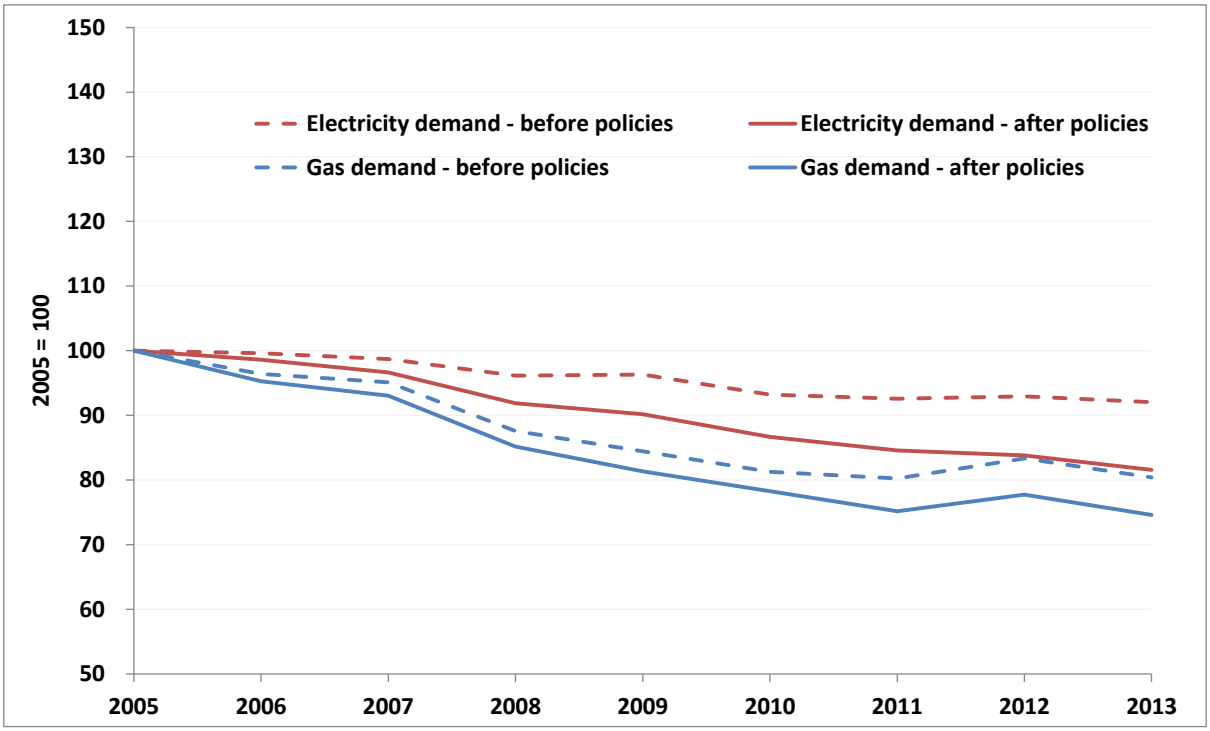
[16] Data on energy prices statistics are available inline, at: https://www.gov.uk/government/organisations/department-of-energy-climate-change/about/statistics#energy-price-statistics. Energy consumption data is available from *Energy consumption in the UK*, Chapter 3, Table 3.07. Available https://www.gov.uk/government/statistics/energy-consumption-in-the-uk

29. The fall in household energy consumption over recent years has likely been driven by a number of factors, including improvements in household energy efficiency, a demand response to rising real energy prices over time falling real incomes during the recession. Improvement in household energy efficiency includes the impact of policy driven improvements to the building fabric, more efficient household appliances, and energy efficient behavioural change.

30. Chart 3 compares trends in total domestic gas and electricity consumption with and without the impact of energy efficiency policies.[17] The estimated impact of energy efficiency policies is represented by the difference in the equivalent solid and dotted lines. Both lines have been indexed to 2005=100.

31. The chart shows that since 2005, a significant amount of the reduction in electricity consumption is estimated to have been driven by government policies to improve household energy efficiency allowing households to heat and power their homes more efficiently.

Chart 3: Index of estimated total domestic gas and electricity consumption (temperature adjusted) before and after the impact of policies



Source: Estimated policy savings taken from DECCs Updated Energy and Emissions Projections model. https://www.gov.uk/government/collections/energy-and-emissions-projections. Final consumption data from Energy Trends September 2014.

1.3 Business energy consumption and bill trends

32. It is less straightforward to consider trends in business energy bills due to the greater level of diversity in the non-domestic sector. Bother gas and electricity prices have increased since

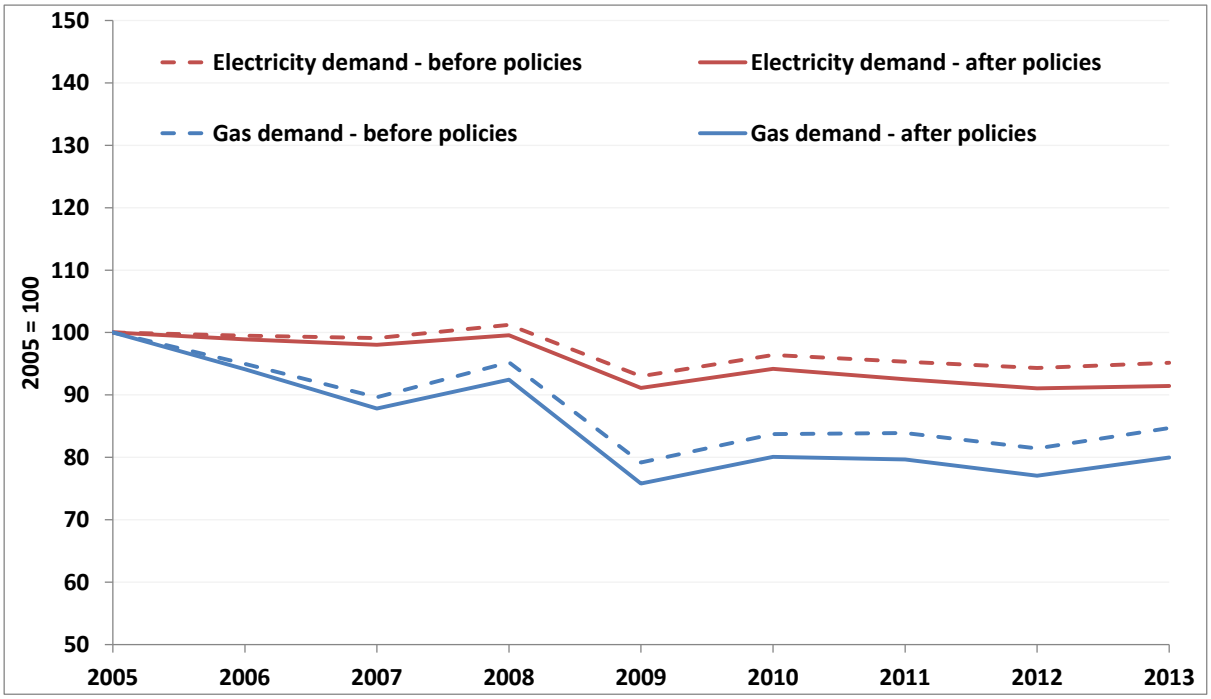
[17] Demand 'before policies' has been constructed by adding estimated policy savings (taken from DECCs Updated Energy and Emissions Projections model) to final consumption data from Digest of UK Energy Statistics (2013).

2005, but historic information on industrial and service sector energy intensity shows that energy intensity, as measured by energy consumption per unit of production/output has fallen, by 17% for industry and 9% for services, since 2005.[18]

33. Consumption trends in the non-domestic sector are heavily driven by fuel-switching, and the economic environment. The effect of the recession is notable in both gas and electricity consumption, as shown in Chart 4. However energy efficiency policies have also played a role in reducing consumption. Policies such as minimum standards of efficiency for energy using products (Products Policy), Carbon Trust measures, and the Energy Performance of Buildings Directive have helped to reduce consumption compared to what it would have been without policies.

    Overall, these reductions in energy use will have helped to offset some of the impacts of the price rises on non-domestic energy bills over the same period.

Chart 4: Index of estimated non-domestic gas and electricity consumption (temperature adjusted) before and after the impact of policies



Source: Estimated policy savings taken from DECCs Updated Energy and Emissions Projections model. https://www.gov.uk/government/collections/energy-and-emissions-projections. Final consumption data from Digest of UK Energy Statistics (DUKES, 2014).

[18] Source: *Energy consumption in the UK*. The figures relate to 2005 to 2012 period. The industry figure relates to energy consumption per unit of production. The services figure relates to energy consumption per unit of output.

2 International comparisons

Summary

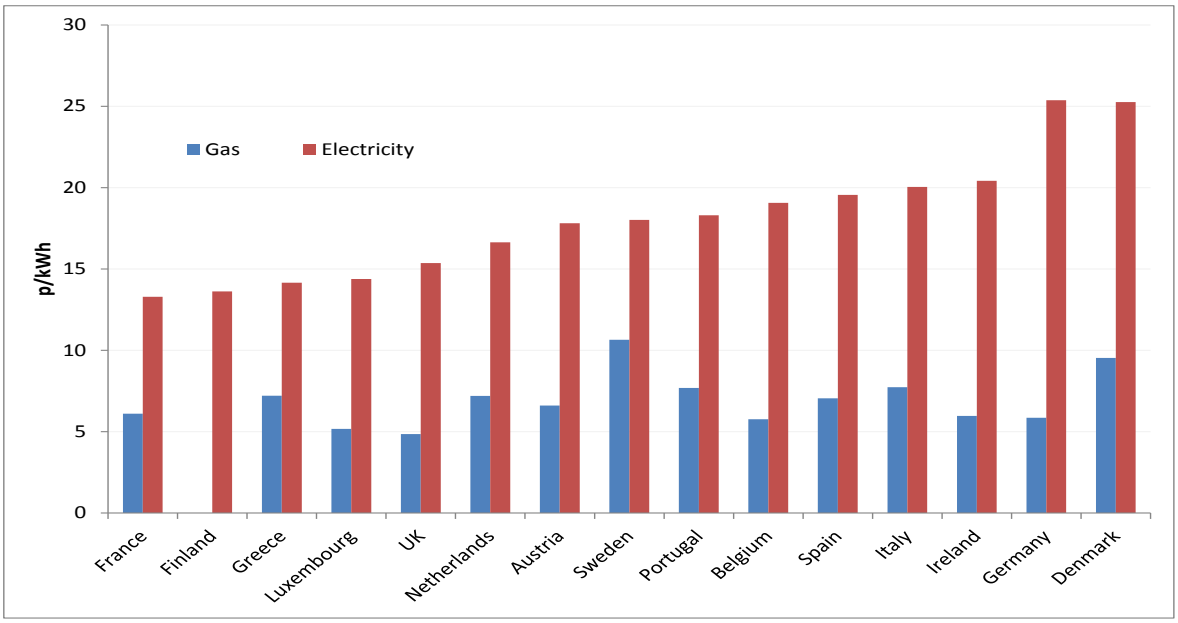
- **The UK currently ranks well in Europe for household energy prices and industrial gas prices** – In 2013, UK households paid the lowest gas prices and fifth lowest electricity prices in the EU 15, small and medium-sized industrial users paid the lowest gas prices in the EU 15 and large industrial users paid the second lowest.
- The UK currently ranks less well internationally for industrial electricity prices. Recognising this, **the government has introduced a number of policies to help limit the impact of policies on electricity-intensive industries most at risk.**

2.1 Households

34. The UK currently ranks well in Europe for household energy prices. Chart 5 shows that, when compared to the EU 15, UK households faced the **lowest gas prices** and the **fifth lowest electricity prices in 2013.**[19] Comparatively low levels of government policy costs and VAT in the UK contribute significantly to this positive ranking.[20] Lower wholesale electricity costs drive lower electricity prices in some other countries, particularly in France.

[19] Excluding taxes UK households pay the fifth lowest gas and electricity prices. This is still below the EU 15 median.
[20] Household Energy Price Index for Europe, January 2013. Available online at http://www.energypriceindex.com/wp-content/uploads/2011/08/HEPI_Press_Release_January20131.pdf .

Chart 5: Average household energy prices in 2013 (2014 prices) in the EU - including taxes[21]



Source: Eurostat data as of June 2014, published in DECC's Quarterly Energy Prices available at https://www.gov.uk/government/organisations/department-of-energy-climate-change/about/statistics. Note: Data sorted by electricity prices. Information on the gas price in Finland was not available.

2.2 Businesses

35. The UK currently ranks well in Europe for **industrial gas prices**. In 2013, the UK had the lowest gas prices for small and medium users in the EU 15, and the second lowest prices for large businesses.[22] Among the G7, lower gas prices in the US and Canada reflect large-scale availability of cheap domestic supplies (see Annex C for further detail).

36. However, the UK ranked less well in Europe for **industrial electricity prices** with prices higher than the EU 15 median for all sizes of industrial consumer except small.[23] Countries in the Nordic area and France outperform the UK due to lower wholesale electricity costs. In addition, very large users in countries like Germany, Denmark and Italy currently receive significant reimbursements on energy taxes and the costs of low carbon energy support.

2.3 The future international position

37. The above statistics are based on historical data. The future international position is less clear: It is uncertain how developments in shale gas will impact European gas prices, France and Germany are likely to face significant additional costs as a result of electricity market

[21] Average energy price data for EU15 is available for small, medium and large domestic consumers. This chart is based on 'medium' consumption levels with average consumption between 2,500 – 4,999 kWh for electricity and 5,557 – 55,557 kWh for gas.

[22] Once taxes are excluded, the UK has the lowest gas price for small industrial users, second lowest for medium industrial users and fourth lowest for large industrial users. The price paid by all users is still lower than the EU15 median.

[23] Small industrial consumers are assumed to consume on average between 20 – 499 MWh/year of electricity. UK industrial electricity prices are higher than the EU 15 median for all sizes of industrial consumer once taxes are excluded; excluding taxes, the UK has the fourth highest electricity price for small users, second highest for medium and extra-large consumers and the highest price for large users.

reorganisation and nuclear phase out respectively, and all EU countries are subject to EU-wide targets for renewable energy and carbon emissions.

38. Recognising that relatively high UK industrial electricity prices are partly driven by policy costs, the UK has introduced a number of policies to help limit the impact of policies on electricity-intensive industries (for more information see Chapter 5).

3. How policies impact energy bills

Summary

- There are three main routes through which policies can impact the amount households and businesses spend on energy:
  - **Wholesale energy costs** – by changing the costs of producing energy;
  - **Retail energy costs** – by changing the costs of supplying energy to final customers; and
  - **Energy use** – by changing the amount of energy needed to provide heat and power, or by changing energy consuming behaviour.

39. This report focuses on the impact of policies on electricity and gas bills for households and businesses. It does not cover the impacts that policies have outside energy bills. These costs and benefits are, however, covered in individual policy Impact Assessments (see Annex B for further details).

40. There are three main routes through which policies can impact (either positively or negatively) the amount households and businesses spend on energy, with some policies impacting via more than one route:

- **Wholesale energy costs,** by changing the costs of producing energy. For example, on the one hand, the EU Emissions Trading System (EU ETS) increases wholesale electricity prices by increasing the costs of generating electricity from fossil fuels. On the other hand, policies aimed at supporting investment in low-carbon technologies, which typically have low generating (operating) costs, and also policies aimed at improving security of supply, such as the Capacity Market, may also put downward pressure on wholesale electricity prices.
- **Retail energy costs,** by changing the costs of supplying energy to final customers. For example, on the one hand, the Renewables Obligation (RO) imposes costs on retail electricity suppliers, reflecting the amount required to support investment in large-scale renewable electricity technologies. On the other hand, Smart Meters are expected to reduce supply costs for retail energy suppliers in the medium-term by reducing the costs of meter reading, managing debt and the customer switching process.
- **Energy use,** by changing the amount of energy needed to provide a particular energy service (i.e. heating, cooking, and power) or by changing behaviour. For example, the

ECO funds energy efficiency improvements in homes while Smart Meters are expected to encourage more energy efficient behaviour.

41. Projecting what impact policies will have on future energy bills is inherently uncertain, with uncertainties increasing further into the future. While this report presents results to 2030, the projections are especially uncertain out to this period and the main focus is therefore on impacts in 2014 and 2020. Chapter 6 discusses the drivers of uncertainty in more detail and presents sensitivity analysis for alternative scenarios for fossil fuel prices.

42. In order to isolate the impact of policies, this analysis excludes other factors that will also drive changes in energy bills (through consumption decisions), in particular future changes in weather or consumer tastes.[24]

43. The impact of policies is presented as the difference between an energy bill in a given year compared with what that bill would have been in the same year if the policies had never been in place (the no policy "baseline"). This is different to looking at the impact of stopping policies from today. Even if policies were stopped today, some costs and savings would continue from technologies and measures already built and installed.

44. The report broadly follows the same methodology as the previous report with no significant analytical changes. However, the analysis in this report is presented in real 2014 prices in order to present all figures in today's prices. Therefore in addition to any updates in estimated policy costs, savings, and other modelling assumptions (see Annex B), all monetary figures (costs and savings) presented in this report will also be larger than those estimated in March 2013, reflecting price inflation.

[24] i.e. weather effects and consumer tastes have been held constant. As such, baseline (before policies) energy consumption for all illustrative users in this document remains flat over time and is unchanged from the analysis in the March 2013 report.

4. Household energy bills

Summary (all figures in real 2014 prices unless otherwise specified)

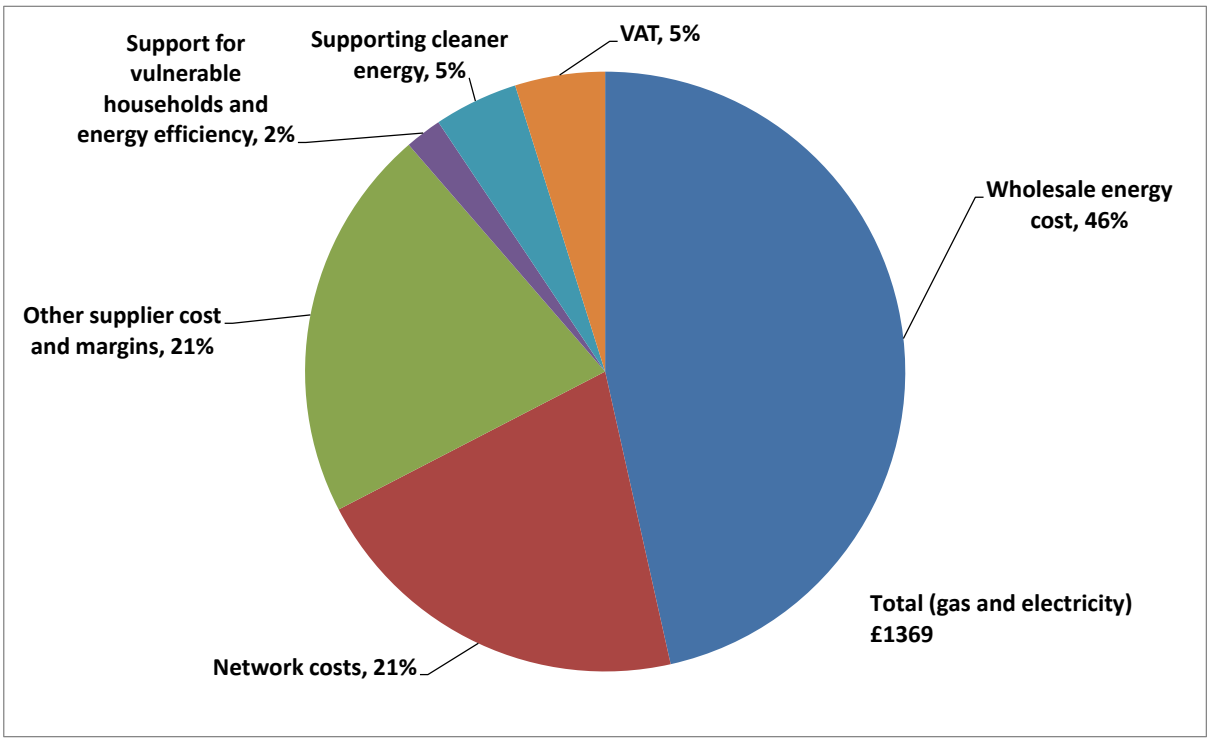
- **Household energy bills are estimated to be, on average, around £90 (6%) lower in 2014 than they would have been without policies.** On average, the cost of supporting home-grown, low-carbon sources of energy accounts for around 5% of a household energy bills, and the cost of supporting investment in energy efficiency and supporting vulnerable households net of the Government Electricity Rebate, accounts for around 2-3% of the same bill. However, these costs are, on average, more than offset by the bill savings from energy efficiency policies – on average, household gas use is around 10% lower this year than it would have been, and electricity use 17% lower, as a result of energy efficiency policies, such as the ECO and Products Policy.
- **The costs of policies on bills will be lower this year than last year,** reflecting the package of measures for household energy bills announced at the last Autumn Statement, worth around £50 per household in 2014. It includes changes government has announced to the ECO scheme, a £12 Government Electricity Rebate[25] to be paid to household electricity customers in 2014 (and 2015) and a voluntary deferral of, on average, £5 in electricity distribution costs by Distribution Network Operators (DNOs).
- **By 2020 household energy bills are estimated to be around £92 (7%), lower on average than they would have been without policies.** Although the cost of supporting investment in low carbon technologies is expected to increase, so too are savings from energy efficiency policies – household gas use is estimated to be around 14% lower and electricity use 29% lower in 2020 as a result of policies.
- These impacts reflect the average across the household sector but, in fact, no two households are the same, and policy impacts will vary across the household distribution. **Poorer households typically spend more of their total expenditure on energy, but are also more likely to be eligible for support through policies.**
- **Households that take up insulation measures or receive a Warm Home Discount will benefit the most, but even households who do not receive such measures stand to benefit.** Products Policy and Boiler Regulations remove the least efficient products from the market, improving energy efficiency through natural turnover and replacement, and the roll-out of Smart Meters will enable households to make more efficient energy consumption decisions.

[25] Government Electricity Rebate Impact Assessment available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/360461/ger_ia.pdf

4.1 Breakdown of 2014 household energy bill

45. Based on estimated average consumption levels after policies of 15.0MWh of gas and 3.7MWh of electricity, household dual fuel bills are estimated to be, on average, around £1,369 in 2014: £783 for gas and £586 for electricity (2014 prices).

Chart 6: Estimated breakdown of average household energy bills (gas and electricity) in 2014[26]



Source: DECC 2014. Percentages may not sum to 100% due to rounding.

46. Chart 6 presents the main components of the household energy bill in 2014, which are:

- **Wholesale energy costs (46%):** the costs to energy suppliers of purchasing gas and electricity. This excludes carbon costs (from the EU ETS and the Carbon Price Floor (CPF)) which this analysis accounts for under "policy costs".
- **Network costs (21%):** the costs of installing, maintaining and replacing the wires and pipes to transport energy from where it is produced or generated to end consumers through the transmission and distribution system. These costs are regulated by Ofgem.
- **Other supplier costs and supplier margins (21%):** energy suppliers also face other costs including the costs of serving customers, metering, billing and managing debt.[27]

[26] The breakdown for electricity and gas bills individually can be found in Annex E.

[27] Note that the costs and savings associated with smart meters are for the purposes of this analysis accounted for within the policies category of the bill breakdown.

The net margins energy suppliers make vary each year and between suppliers. In 2013 the average net margin was 4%.[28]

- **Costs of policies:** this covers the cost of supporting investment in energy efficiency, providing help to vulnerable households and the Government Electricity Rebate **(2-3%)**, and supporting home-grown low-carbon sources of energy **(5%)**. The total share of policy costs on household energy bills is estimated to be lower than that estimated for 2013 as a result of the package of measures announced in the Autumn Statement (see Box 1). Section 4.5 demonstrates how these costs are, on average, more than offset by energy efficiency savings from policies.
- **VAT (5%):** VAT at a reduced rate of 5% (the lowest rate allowed under EU regulations) is applied to the final energy bill cost for households.

47. The above chart also reflects the estimated impact of the package of measures announced at the last Autumn Statement and worth around £50 per household in 2014 (see Box 1).[29]

Box 1: The Autumn Statement 2013 household energy bill package

On 2 December 2013 the government announced plans to reduce the impact of energy supplier price rises on energy bills through:

- Establishing a Government Electricity Rebate of **£12** on household electricity bills in 2014 and 2015 delivered by energy suppliers.[30]
- Reducing the cost of the Energy Company Obligation (ECO). While costs will vary across companies, the major energy suppliers have announced that the changes will result in an average **£30-£35** off bills in 2014.
- In addition, electricity distribution network operators (DNOs) have taken voluntary action to reduce network costs in 2014/15, leading to a further one-off deferral of around **£5** on electricity bills on average.

The total reduction in individual household energy bills will depend on the energy supplier but, on average, DECC estimates that this package is **worth around £50 per household** (see Table 1).

All large suppliers have announced that they will pass these savings on to consumers either through reductions in previous price increases or maintaining limited price rises that were previously implemented provided that the government took action on the costs of social and environmental programmes.

At the Autumn Statement, the government also committed to ensuring that policy costs on average household energy bills would not rise beyond 2013 levels next year.

[28] Source: Ofgem - Consolidated Segmental Statements
[29] Available online at: https://www.gov.uk/government/news/govt-action-to-help-hardworking-people-with-energy-bills.
[30] Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/360461/ger_ia.pdf.

Table 1: The average impact of the Autumn Statement 2013 package on household energy bills in 2014

Real 2014 £	Before measures	After measures	Difference
Total bill	**£1,420**	**£1,369**	**-£51**
Wholesale energy costs	£637	£637	-
Network costs	£291	£286	-£5
Other supplier costs and margins	£291	£291	-
VAT	£68	£66	-£1
Energy and climate change policies	£133	£89	-£44
Of which:			
Energy Company Obligation	*£68*[31]	*£36*	*-£33*
Government Electricity Rebate	-	*-£12*	*-£12*
Other policies	*£65*	*£65*	

Source: DECC 2014. Totals may not sum due to rounding.

4.2 Future trends and policy impacts

48. Table 2 and Chart 7 show the estimated average energy bills paid by UK households in 2014, 2020 and 2030 and the impact of energy and climate change policies on these in each year. They show that, on average, the bills savings delivered through policies are expected to more than offset the costs of investing in energy efficiency and decarbonising the electricity sector. As such, energy and climate change policies are estimated to deliver, on average, a net saving on household energy bills in each year compared with if these policies were never in place.

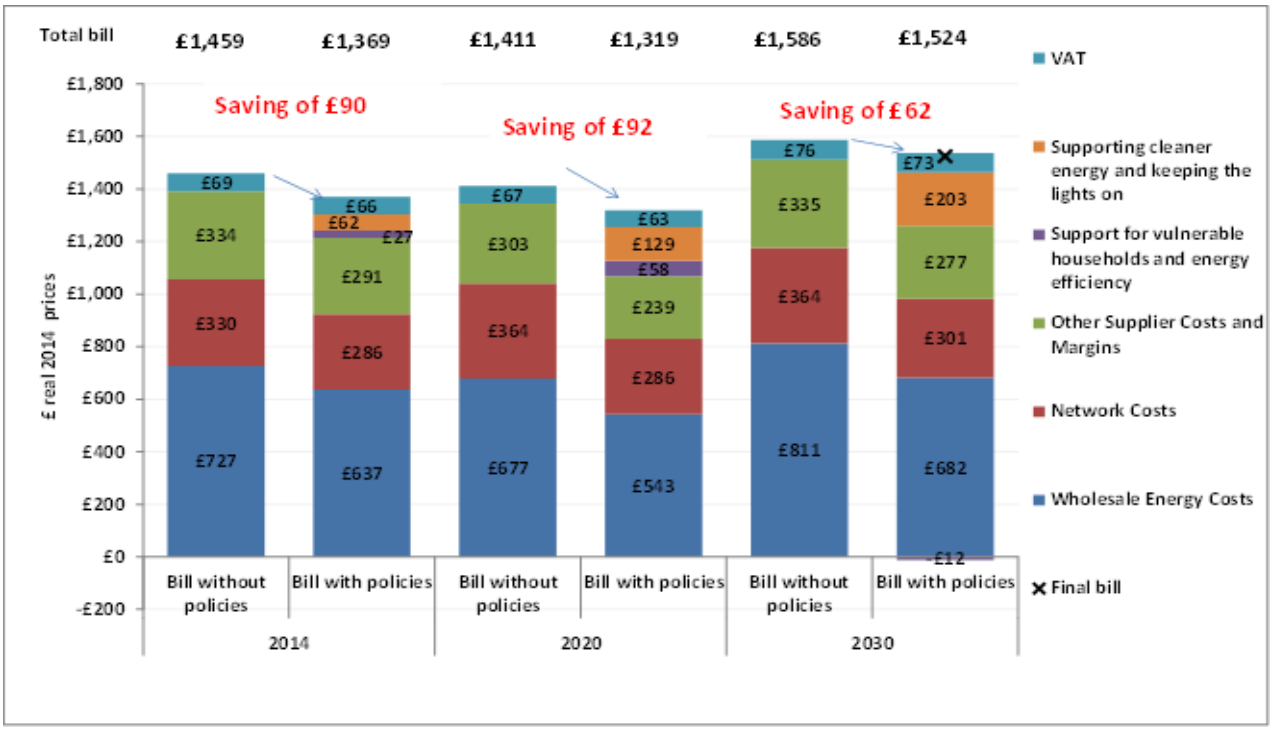
49. Further detail on the breakdown of these impacts is available in Annex D.

[31] The estimated annual average ECO cost before this package takes effect is around £1.4bn for the original target period to 31 March 2015 (equivalent to around £59 per year on average on household bills). The relatively high estimated 2014 costs reflect the suppliers' trajectory towards compliance with the original targets where carbon target delivery run rates would need to ramp up from historic rates if the targets were to be met. Suppliers had delivered 39% and 28% of their CERO and CSCO obligations respectively (approved and notified measures) to the end of March 2014 which represents 56% of the original 2.25 year target obligation period. The costs reported between December 2013 and March 2014 will not be wholly indicative of the costs of complying with energy companies' original target, given that many of the companies will have additional 'free' compliance awarded towards their CERO target compliance, due to December 2013's pre-announced changes to the original ECO scheme. Therefore, their reported CERO costs in this period will relate to more carbon compliance than has been delivered.

Table 2: Summary of estimated average impact of policies on household gas and electricity bills (inc. VAT)

Real 2014 prices	2014	2020	2030[32] (See footnote)
Average **gas bill** without policies	£832	£778	£897
Average **gas bill** with policies	£783	£713	£795
Impact of policies on average **gas bill**	-£49 (-6%)	-£65 (-8%)	-£102 (-11%)
Average **electricity bill** without policies	£627	£633	£689
Average **electricity bill** with policies	£586	£606	£729
Impact of policies on average **electricity bill**	-£41 (-7%)	-£27 (-4%)	£40 (6%)
Average energy bill without policies	**£1,459**	**£1,411**	**£1,586**
Average energy bill with policies	**£1,369**	**£1,319**	**£1,524**
Impact of policies on average energy (gas plus electricity) bill	**-£90 (-6%)**	**-£92 (-7%)**	**-£62 (-4%)**

Chart 7: Estimated household energy bills with and without policies[33] (See footnote for 2030)



Source: DECC 2014. Figures may not sum due to rounding.

[32] As noted elsewhere in the report, the 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 (2023-27) and beyond.

[33] As noted elsewhere in the report, the 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 (2023-27) and beyond.

50. In 2014, household energy bills are estimated to be, on average, around £90 lower than they would have been in the absence of policies. This impact reflects both the impact of policies in adding to energy prices, and also the savings policies are currently delivering through energy efficiency and the Warm Home Discount, which act to more than offset these costs, on average.

51. By 2020, household energy bills are estimated to be, on average, around £92 lower than they would have been in the absence of policies. The energy efficiency savings delivered through policies such as Smart Meters, ECO and the Green Deal, Products Policy, and Building Regulations, are expected to increase to 2020, continuing to more than offset the costs of policies on bills, on average. Policy costs on household energy bills are estimated to increase to an average of around £188, of which £92 is support for low-carbon generation (small-scale Feed-in-Tariffs (FITs), the Renewables Obligation (RO) and Contracts for Difference (CfDs)), the costs of which are controlled by the LCF (see Box 2). However these are more than offset by the savings from policies in 2020 (£276), leading to the overall saving of £92.[34]

Box 2: The Levy Control Framework

The Levy Control Framework (LCF) is a part of the government's public spending framework. It places limits on the aggregate amount levied from consumers by energy suppliers to implement government policy. In effect, it specifies the maximum allowable spending on levy-funded policies and thereby helps protect energy consumers from excessive levies on their energy bills.

Spending on low carbon support (RO, FITs and CfDs) is capped by the Levy Control Framework (LCF) in 2020/21 at £7.6bn in £2011/12 prices. This is estimated to represent, on average, around £92 (7%) on household energy bills in 2020 (real 2014 prices). However, we estimate that the costs of LCF policies and other energy and climate change policies will be more than offset, on average, by the savings policies can deliver on household energy bills, for example through improved energy efficiency.

52. The estimated net savings in 2020 of £92 are lower than the £166 estimated in the March 2013 report for two main reasons:

- Estimated savings from historic energy efficiency policies (CERT, CESP, and EEC I&II) have been revised downward primarily reflecting updated scientific evidence on the energy savings achieved by the measures installed under these schemes; and
- DECC's wholesale gas price projection in 2020 is around 20% lower than that assumed in our March 2013 analysis. This reduces the monetary value of each unit of energy saved.

53. Estimated bill savings are lower in 2030 because the analysis does not include any new or continued energy efficiency policies that may be needed in order to meet future carbon

[34] The bill saving figure of £276 in 2020 is valued at prices before policies, and does not include VAT.

budgets. However, the full costs of policies to decarbonise electricity supplies (such as Electricity Market Reform (EMR)) out to 2030 are included. To meet longer-term emissions goals it is envisaged that further energy efficiency policies would need to be introduced helping households to make greater savings.

Other factors

54. **Wholesale gas costs, other supplier costs and margins, and network charges are assumed to be unchanged by policies**.[35] Wholesale gas prices are largely determined by global market conditions. The impact of policies on distribution networks is likely to be insignificant out to 2030.[36] Although there is likely to be some increase in electricity transmission charges associated with low carbon technologies (transmission charges account for less than quarter of total electricity network charges), these could be partially offset by network savings from reduced energy demand as a result of energy efficiency policies.

55. Supplier costs and margins are estimated to represent around 18% of household energy bills on average in 2030 (£277). These estimates exclude the cost savings from Smart Metering, which have been accounted in the net policy impacts element of the bill. Smart Metering is estimated to deliver reductions in elements of supplier costs, for example through the avoidance of manual meter reads and a streamlined customer switching process, as well as consumption savings to consumers.

56. Beyond the impact of Smart Metering, improved energy market competition can also act to reduce the supplier cost and margin element of the bill. DECC and Ofgem have introduced a number of reforms aimed at stimulating competition in energy markets (e.g. Ofgem's Retail Market Review, Ofgem's reforms to improve liquidity in wholesale markets, and the action government has taken to reduce barriers to growth and entry in the retail energy market). Competition can act to drive innovation to reduce costs and also act to reduce margins which can feed through to lower energy bills. **These effects have not been factored into the analysis.**

57. Interconnection can also help by increasing competition across Europe and enabling the most efficient location of generation. It has **not been factored in** to the estimates here but preliminary analysis suggests a potential household electricity bill reduction of **up to £7** in the 2020s (see Box 3).

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[35] It is possible that government policies can impact these elements. For example, policies to stimulate competition can act to reduce margins, the need to connect new low-carbon generation can add to network costs and improvements in energy efficiency can reduce network costs. These impacts have not been quantified and are, therefore, not included in this analysis.

[36] Further detail can be found in the EA Technology report '*Impact of Policy that Drives Low Carbon Technologies on Distribution Networks*' prepared for DECC and published alongside this report.

Box 3: The impact of electricity interconnection policy on consumer bills

Interconnection between GB and other European markets can lead to reduced electricity bills by increasing competition across Europe and enabling the most efficient location of generation. Interconnection also has the potential to deliver security of supply more cheaply than many domestic alternatives. Government is committed to significantly increasing our current 4GW of electricity interconnection capacity through cost-effective projects that best deliver against our energy objectives, including on security of supply and affordability.

Evidence commissioned by government,[37] published in December 2013 alongside our policy statement ("More interconnection: improving energy security, lowering bills"),[38] shows that, under some scenarios, GB consumers could benefit by up to £9bn to 2040[39] (net present value in real 2012 prices) from reduced wholesale prices and network reinforcement. This includes the benefits of interconnection to Norway, as well as shorter links. Preliminary DECC analysis of this suggests a potential household electricity bill reduction of up to £7 in the 2020s.[40]

Other scenarios studied showed the potential costs to GB consumers could be as significant as the potential benefits. To ensure the right outcome for consumers, Ofgem has brought in a new regulatory framework[41] for interconnection investment which includes a rigorous assessment of impacts and costs to ensure only projects that are in consumers' interest go ahead.

Further detail on energy efficiency impacts

58. As set out in Chapter 2, when corrected for changes in temperature, household energy consumption has fallen in recent years, with energy efficiency policies playing a significant role. Charts 8 and 9 below show the projected energy savings from policies for electricity and gas respectively in 2014, 2020 and 2030.[42]

[37] Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/266307/DECC_Impacts_of_further_electricity_interconnection_for_GB_Redpoint_Report_Final.pdf.

[38] Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/266460/More_interconnection_-_improving_energy_security_and_lowering_bills.pdf.

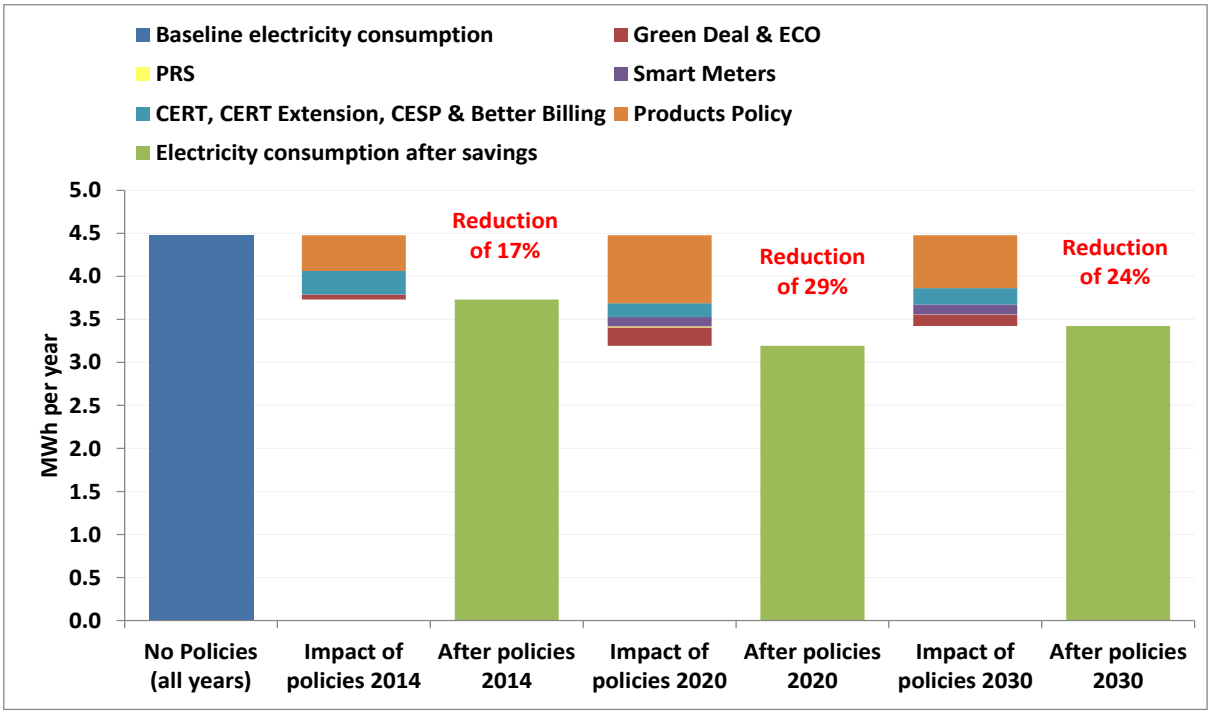
[39] The model looked at net welfare as comprised by consumer, producer and interconnector owner welfare. The precise distribution between the three categories needs to be considered with caution. There are also interactions with the capacity market which have not been modelled.

[40] Focusing just on impacts on the wholesale electricity costs and some electricity network components of the bill.

[41] https://www.ofgem.gov.uk/publications-and-updates/decision-roll-out-cap-and-floor-regime-near-term-electricity-interconnectors

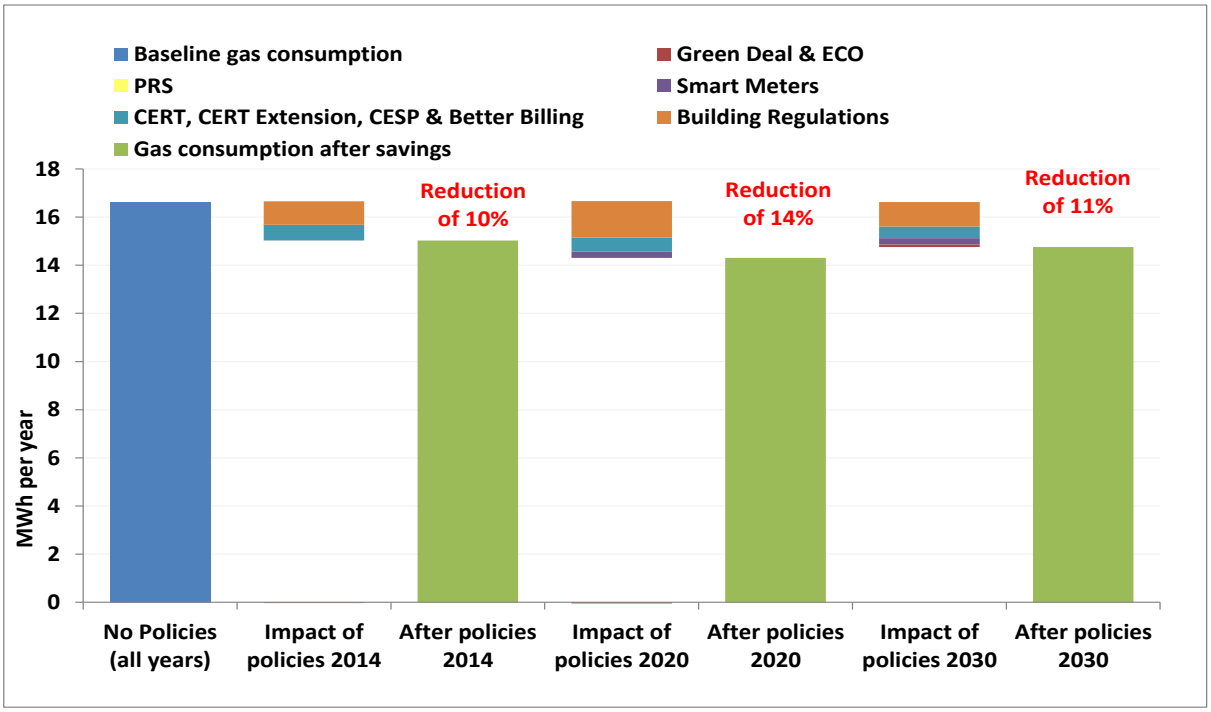
[42] As noted elsewhere in the report, the analysis does not include any new energy efficiency policies or extensions to current energy efficiency policies beyond 2022 that may be required to meet the 4th Carbon Budget (2023-27) and beyond.

Chart 8: Household electricity consumption: before and after policies[43] (See footnote for 2030)



Source: DECC 2014

Chart 9: Household gas consumption: before and after policies[44] (See footnote for 2030)



Source: DECC 2014

[43] As noted elsewhere in the report, the 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 (2023-27) and beyond.

[44] As noted elsewhere in the report, the 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 (2023-27) and beyond.

59. Table 3 below summarises the bill impacts of these energy savings, as valued at final prices (i.e. including policy costs, see Annex E for further detail). The fall in the value of savings in 2030 primarily reflects that the 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 (2023-27) and beyond. Valued at final energy prices, energy efficiency policies are estimated to deliver average savings of around £206 in 2014, rising to £364 in 2020 compared to a world in the absence of these savings, the majority of these savings (£143) from Products Policies. By 2030, these savings fall to £329. It is envisaged that further energy efficiency policies may need to be introduced, helping households make greater savings.

Table 3: Bill impact of energy efficiency savings valued at final prices (inc VAT)[45]

Real 2014 prices	Gas	Electricity	Dual Fuel
2014	-£83	-£123	-£206
2020	-£115	-£249	-£364
2030[46] (See footnote)	-£101	-£228	-£329

Source: DECC 2014

60. Detail on some of the evidence underpinning these estimated savings is set out in Box 4. Drawing on a range of evidence including observed energy savings, policies are estimated to be saving households an average 10% on their gas use[47] and 17% on electricity use in 2014. A significant amount of savings are from schemes that do not require consumers to change behaviour, namely Building Regulations on more efficient gas boilers, and EU standards (Products Policy) on more efficient household appliances such as TVs and fridges. The remainder of the energy savings are from insulation and other energy efficiency measures delivered through obligations on energy suppliers (e.g. the current ECO scheme and previous Carbon Emissions Reduction Target (CERT) and Community Energy Saving Programme (CESP)).

[45] These figures value energy efficiency savings at final prices, consistent with the approach in the previous report. These figures are not additive to the costs presented in the rest of this report due to issues of double counting of second round effects (see Annex E explanatory introduction). Annex E tables set out efficiency savings that strip out these second round effects (which are captured in the cost figures) and can therefore be added to cost estimates to arrive at the net impact of policies.

[46] As noted elsewhere in the report, the 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 (2023-27) and beyond.

[47] This accounts for the increase in gas consumption from Products Policy. More efficient appliances emit less heat which needs to be replaced with extra heating from gas. This also accounts for the increase in gas consumption as a result of gas boilers replacing electric heating as part of the Affordable Warmth element of ECO.

Box 4: Evidence of the impact of household energy efficiency policies

Evidence shows that energy efficiency policies are already having a significant impact on household energy bills across the UK. The actual impact of energy efficiency policies on household energy consumption and energy bills will depend on (1) the performance of different energy efficiency measures and (2) the uptake of measures.

In terms of performance, the National Energy Efficiency Data-framework (NEED[48]) contains evidence on actual consumption in homes before and after receiving cavity or loft insulation. It shows that the installation of energy efficiency measures enables considerable energy savings for real households. For example, a typical saving of around 10% of annual gas consumption for cavity wall insulation and 3% for loft insulation. A household with Solid Wall Insulation is estimated to save around 14% per year.

However the saving on energy bills will depend on several factors including the particular measures installed, energy prices, and household characteristics that affect energy consumption. DECC has estimated that households can save from around £26 to £287 or more off their annual heating bill per installation per year from installing the main insulation measures (e.g. loft, cavity, and solid wall).[49]

In terms of the uptake of measures, there is clear evidence that households are installing energy efficiency measures. For example, the latest published statistics show that retro-fit cavity wall insulation has been installed in around 265,000 homes over the past 12 months and that a cumulative total of 2.9 million cavities, 5.6 million lofts and 192,000 solid walls have been insulated through government schemes since April 2008, the start of CERT.[50]

61. By 2020 the estimated energy savings increase to around 14% for gas and 29% for electricity. In addition to continued savings from energy efficiency measures already delivered to households, this reflects:

    - The roll-out of **Smart Meters** across the household sector encouraging more energy efficient behaviour. Energy suppliers are required to take all reasonable steps to roll-out smart meters to all their domestic and smaller site non-domestic customers by the end of 2020.

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[48] For further detail of the NEED please see: https://www.gov.uk/government/organisations/department-of-energy-climate-change/series/national-energy-efficiency-data-need-framework.

[49] Based on estimated energy savings from an illustrative three bedroom semi-detached house heated by gas. The low end of the range represents loft top-up insulation and the high end solid wall insulation. Retail gas price of 5.2p/kWh used in calculation. See 2012 Final Green Deal and ECO IA for details: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/42984/5533-final-stage-impact-assessment-for-the-green-deal-a.pdf. The retail gas price used is 5.2p/kWh and IAG guidance on retail prices available at https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal

[50] For evidence on energy efficiency measures please see https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/49403/7154-stat-release-est-home-ins-oct-2012.pdf.

- Illustrative modelling of a longer-term ECO and Green Deal, which suggests additional insulation and heating measures could be delivered to a further 3.2 million households between 2014 and 2020.
- The continued replacement of energy using products with more efficient products that meet increasingly tighter EU efficiency standards (**Products Policy,** see Box 5). For example, sales figures show households replace fridges and washing machines after around 12 years on average and goods such as televisions after around 7.5 years. When replaced, the new products available to buy will be more energy efficient.
- The gradual replacement of boilers with more efficient boilers meeting the minimum standards set out in **Building Regulations**. Around 10.5 million homes will replace their boiler between 2014 and 2020 as part of the natural replacement cycle of boilers.

Box 5: Evidence on energy savings from Products Policy

European–wide standards and energy labels are making the appliances we buy for our homes more energy efficient. Energy labels indicate relative performance in terms of efficiency, steering consumers towards the most efficient models, while minimum performance standards progressively remove the least efficient products from the market. This means that when replacing an old product with a new one (e.g. an old washing machine with a new washing machine) on average the new product will be more energy efficient than the old one. The same will also be true of the second-hand market.

There is a wide and growing range of energy-using products covered by energy labels and/or minimum standards: in the home, appliances for laundry, cooking, refrigeration, consumer electronic goods such as TVs, set-top boxes, and external power supplies are covered. Heating, ventilation and cooling products for the home and business are also covered, as is lighting in homes, businesses and out in the street. For example, households could spend 80% less on lighting if they used LEDs rather than traditional bulbs over the course of the LED bulb's lifespan. An LED bulb uses around 20% of the energy of the a 60W incandescent bulb but can last up to 50 times longer than an incandescent bulb. The total purchase and running cost of the 60W bulbs would be around £487 from 2013 to 2030, compared to £94 for a single LED (2013 prices).[51]

Evidence also indicates[52] that energy consumption is an important consideration when consumers purchase products for a lifetime of heavy and prolonged use i.e. those products that only tend to be replaced if they break down, like washing machines and refrigerators.

The government has estimated that by 2020, the annual net savings to the UK economy resulting from these standards and labels will be in excess of £850 million per year, with reductions in greenhouse gas emissions of more than 7 million tonnes per year.[53] These estimates assume products are replaced in line with normal replacement cycles for the product in question.

[51] See online at: https://www.gov.uk/government/news/dramatic-fall-in-cost-of-running-household-goods.
[52] Available online at: https://www.gov.uk/government/news/dramatic-fall-in-cost-of-running-household-goods.
[53] DECC "Call for Evidence: Energy Efficiency" at: https://www.gov.uk/government/consultations/developing-better-energy-efficiency

62. The figures discussed so far are average (mean) savings. Households will see greater or lower savings depending on their energy consuming behaviour, and whether they have taken-up insulation measures or are in receipt of the Warm Home Discount. However, as set out in Box 6, certain efficiency measures are likely to penetrate the majority of households. The next section considers how impacts vary across households in more detail.

Box 6: Impact on households that do not take-up insulation measures

The analysis so far focused on the **average impact** of policies across all households. While this is a useful indicator, it is also important to consider how these impacts vary across households depending on whether they take up certain measures – the impacts of policies on energy prices are likely to be borne by all consumers, but not all households are expected to take up insulation measures or be eligible for a Warm Home Discount.

Certain policies, however, are likely to penetrate the majority of households:

- Energy suppliers are required to take all reasonable steps to roll-out smart meters to all their domestic and smaller site non-domestic customers by the end of 2020. It is estimated that smart meters will save £26 on the average household energy bill in 2020 (2011 prices).[54]
- The products and appliances available to all households will have tighter efficiency standards (Products Policy). In 2020 households could save around £30 on their energy bills from more efficient TVs and set-top boxes, a further £25 from more efficient consumer electronics and a further £25 from more efficient lighting among many other products and appliances.
- By 2020, the large majority of households in England and Wales are likely to have replaced their gas boiler since the minimum efficiency standards were introduced in 2002 through Building Regulations (evidence suggests that around1.5 million gas boilers are replaced each year).[55] In 2020 this is estimated to save each household between around £20 and £120 on their annual heating bill.

4.3 Impacts of policies in 2020 across the household distribution

63. The analysis above has focused on the average impact of policies on energy bills. However impacts will vary across households according to their characteristics (such as spending on energy as a proportion of overall expenditure, household composition, and type of heating fuel).[56] Overall the analysis shows:

[54] For more information see the Impact Assessment, available here: https://www.gov.uk/government/publications/smart-meter-roll-out-for-the-domestic-and-small-and-medium-non-domestic-sectors-gb-impact-assessment

[55] Based on evidence from the Heating and Hot Water Industry Council. Available online at: http://www.centralheating.co.uk/news/category/market-reports.

[56] This analysis is based on using a model developed by the Centre for Sustainable Energy (CSE).

- **The average impact of policies is a reduction on energy bills in 2020 across all expenditure deciles and for each different household composition;**
- Households at the bottom of the expenditure distribution typically spend a greater share of their expenditure on energy and will therefore see the **largest** reductions in bills as a proportion of total expenditure i.e. any savings from measures will represent a larger share of household expenditure. These households are also more likely to be eligible for support through a number of policies and targeted directly by others.
- Households that do not take up insulation measures or receive a Warm Home Discount will benefit the least. However these households can still benefit from savings from Products Policy, Boiler Regulations and Smart Meters.
- Electrically heated households are expected to experience higher bills, on average, as a result of policies. To address this, there are a number of measures in place to support electrically heated households, including the Renewable Heat Incentive, which encourages households to install renewable heat measures, such as heat pumps, in return for a tariff payment per unit of heat generated.

64. People on higher incomes generally consume more energy; living in a larger house requires more heating and having more electrical appliances increases electricity consumption. Higher income households will therefore typically experience a larger absolute increase in their energy bills from any given price rise. However, when taken as a proportion of total expenditure (or income), the impact on lower income households of energy price rises becomes greater, as the energy bill makes up a larger share of total expenditure. When assessing distributional impacts it is important to compare changes in energy spending relative to household budgets, so **results below are presented as a proportion of total household expenditure.**

Impact of policies by expenditure decile

65. Chart 10 shows the estimated average impact of policies on energy bills for each equivalised[57] expenditure decile,[58] split by the average of all households in each decile, and also whether households take-up or receive insulation or renewable measures.[59] It shows that households at the bottom of the distribution are expected to see the great proportional reduction in energy bills, on average, as a result of policies (the bottom 30% will benefit from a reduction of between 0.6% and 1.6% of total expenditure compared to a reduction of between 0.2% and 0.5% for other deciles. This is because the cost of energy represents the largest share of expenditure for this group and therefore the savings translate into a relatively larger saving.

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[57] Total expenditure has been equivalised. Equivalised expenditure is a measure of household expenditure that takes account of the differences in a household's size and composition, and thus is equivalised or made equivalent for all household sizes and compositions. DECC uses the OECD equivalisation scale for this analysis.

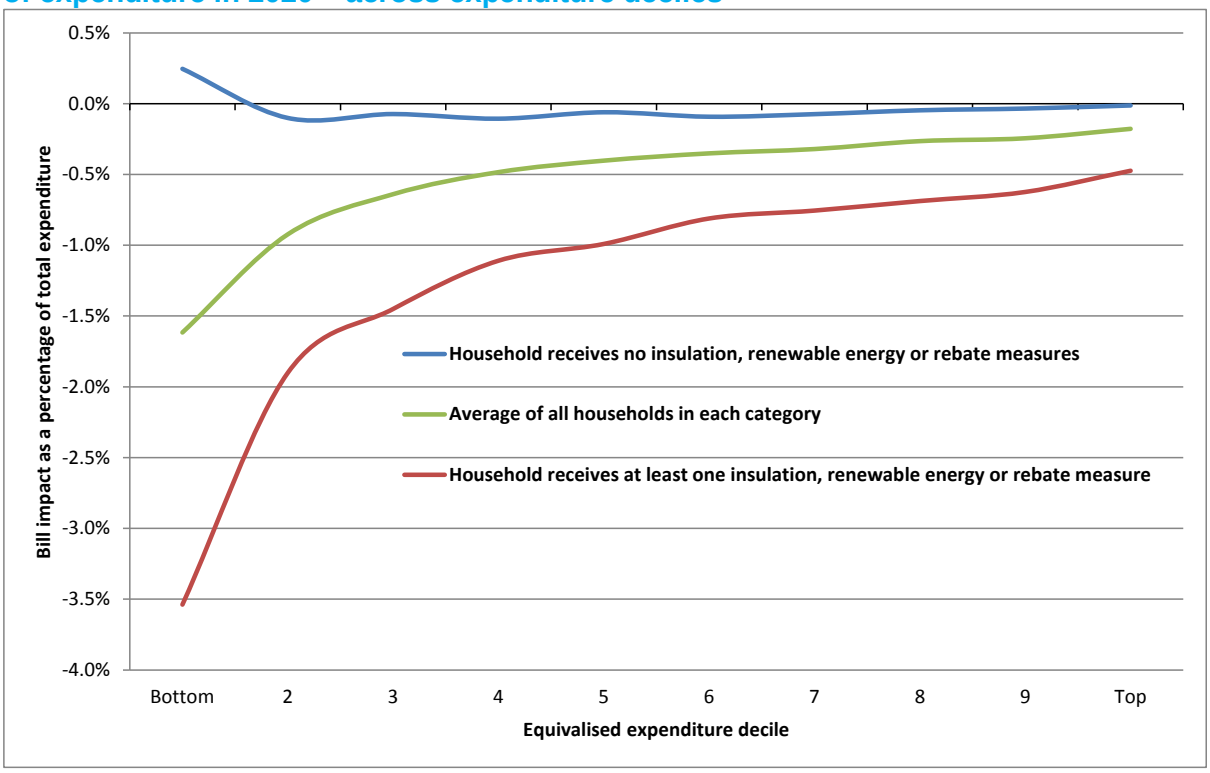
[58] Using expenditure as a characteristic to distinguish households, instead of income, has the advantage that expenditure profiles are generally fairly stable. Households are assumed to be rational and plan their expenditures according to how much income they expect to receive. Expenditure is therefore a stronger measure for characterising households when looking at the impact of policies.

[59] For the purposes of this analysis, a policy measure includes any insulation, heat and renewable energy measure taken out by households since 2010 as a result of the following policies: CERT, CERT Extension, CESP, Green Deal, ECO, RHI and small-scale FITs. Additionally, households that receive a rebate on their energy bill as a result of the Warm Home Discount are also considered to have received a measure.

66. Households at the bottom of the distribution are also expected to take up more measures. This is because this group typically consists of low income and vulnerable households which are eligible for support through a number of policies and in part targeted by others, for example, the Warm Home Discount,[60] and the Carbon Saving Communities and Affordable Warmth elements of ECO.[61] This means the probability of them receiving a measure is higher than for other deciles.

67. However, even if households do not receive any of these types of measures they could still benefit from savings from efficiency standards on electrical appliances and boilers, as well as the roll-out of Smart Meters. Chart 10 therefore demonstrates the bill impact for each decile according to whether they do or do not benefit from measures in 2020.

Chart 10: Effect of receiving a measure on impact of policies on household energy bills as % of expenditure in 2020 – across expenditure deciles



Source: DECC 2014

68. Around 3.4 million (or 45%) of households in the lowest three expenditure deciles are expected to be benefiting in 2020 from policy measures delivered since 2010.[62] Energy bills for these households are estimated to be, on average, between 1.5% and 3.5% of total expenditure lower than they otherwise would have been in the absence of policies. This compares to lower reductions of 0.5% to 1.1% for richer households that do take up

[60] The Warm Home Discount offers rebates to some households funded through energy bills, see Annex B.

[61] See Annex B.

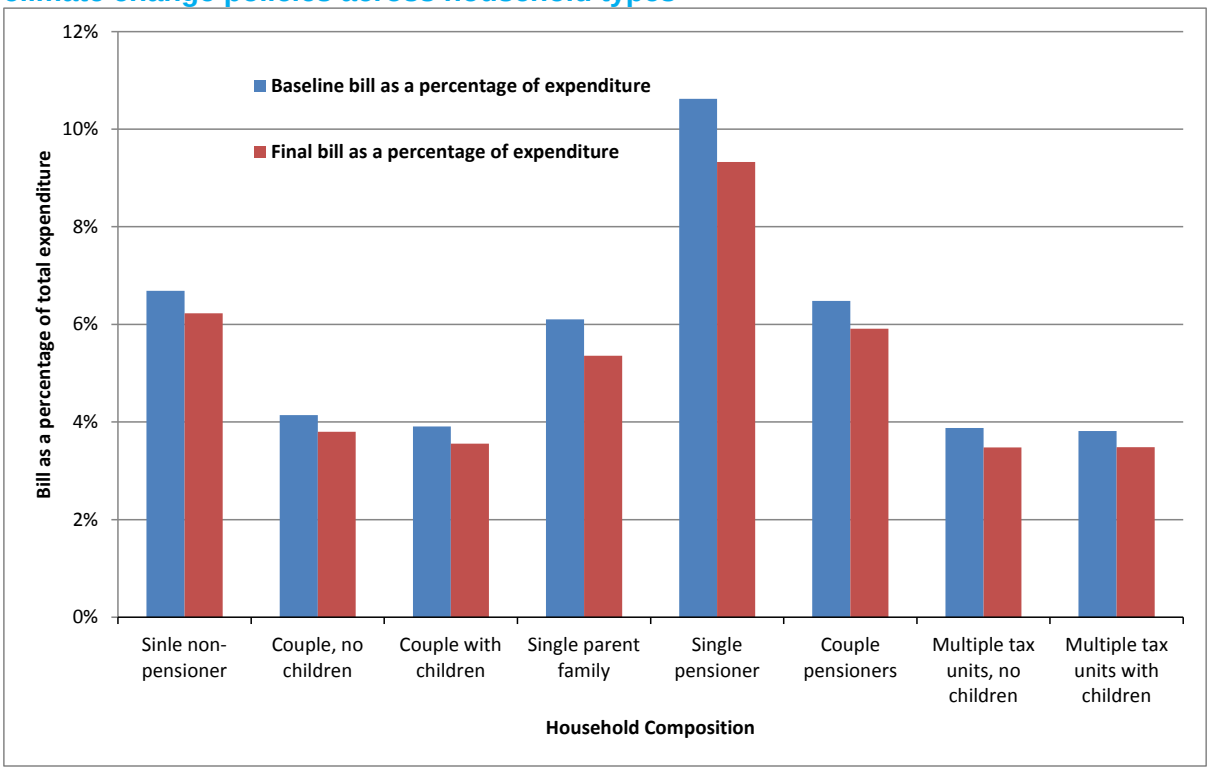
[62] The distributional analysis only captures the impact of measures delivered from 2010 onwards – therefore these figures do not include any households which received measures prior to this.

measures. Households in other deciles that do not take up measures can still benefit from energy bill savings from policies as discussed in previous sections.

Impacts by household type/composition

69. Chart 11 shows the energy bills of different household types/compositions as a proportion of their total expenditure in 2020 before and after policies. The chart shows there is an estimated average net saving for all household types as a result of energy and climate change policies in 2020. Single pensioner households see the largest average savings as a proportion of total expenditure at 1.3%, reflecting policy targeting towards those types of households and relatively lower expenditure.

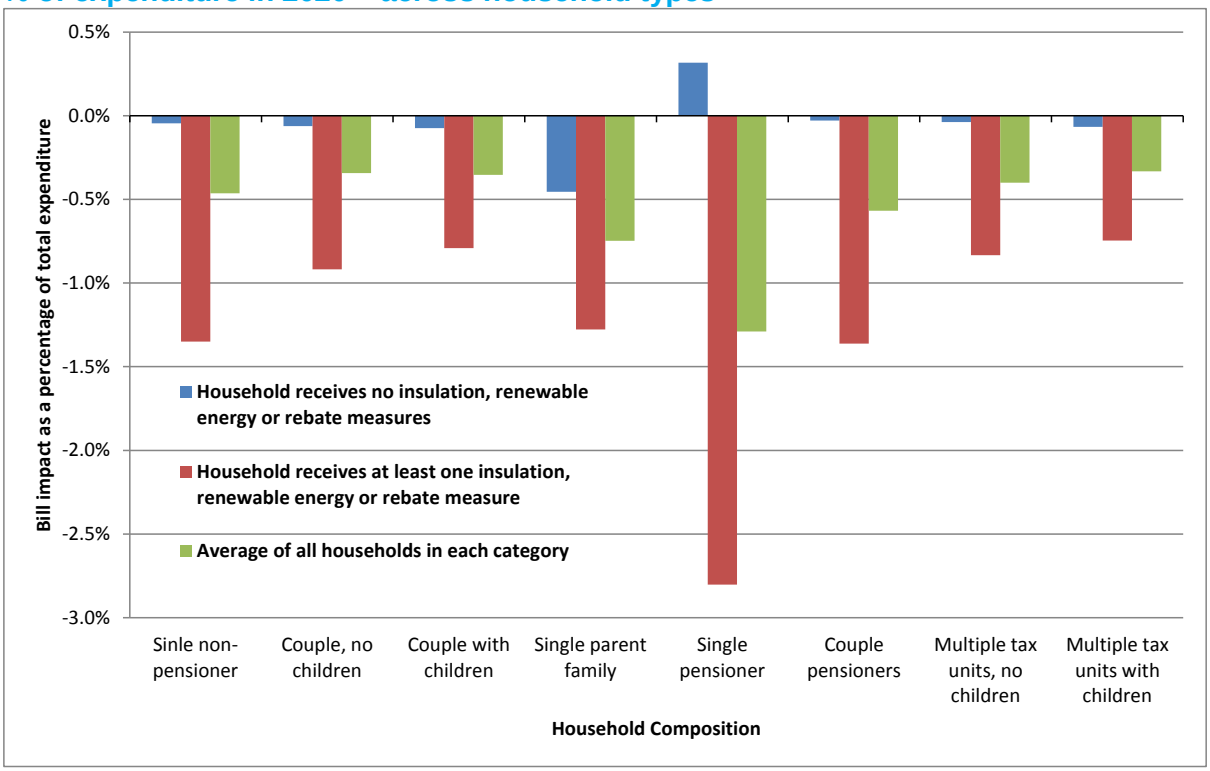
Chart 11: Energy bill as a percentage of expenditure in 2020, with and without energy and climate change policies across household types



Source: DECC 2014

70. These average savings are demonstrated more explicitly in Chart 12. This chart also looks at the impact on bills of households receiving policy measures compared with those who do not. It is noticeable that, for households receiving policy measures, single pensioner households see the largest average bill saving as a percentage of total expenditure (around 2.8% or £202) – around half of whom are estimated to have received at least one insulation measure (being targeted by elements of CERT and ECO) or Warm Home Discount rebate by 2020.

Chart 12: Effect of receiving a measure on impact of policies on household energy bills as a % of expenditure in 2020 – across household types



Source: DECC 2014

71. Households who use electric heating – around 8% of the population[63] – are expected, on average, to see an increase in their energy bills of around 1.4% of total expenditure in 2020 as a result of policies. This compares with estimated decreases of between 0.4% and 0.8% for households using other fuel types. The main driver behind the increase in bills for electrically heated homes is that the impacts of policies are greater per unit of electricity than per unit of gas. However some policies mainly aimed at reducing electricity consumption, such as Products Policy, will generally only lower non-heat related electricity demand.

72. Other policies however will help to reduce impacts of electrically heated households. This includes changes to Affordable Warmth, as part of the wider changes to ECO due to come into effect from 1 April 2015, to incentivise greater delivery of insulation and heating measures to these vulnerable households. These changes are estimated to increase the proportion of households who benefit from measures delivered through Affordable Warmth that are in electrically heated households from the current figure of around 1% to around 20% between 2015 and 2017.[64]

73. The PRS Regulations will also help to alleviate fuel poverty, by requiring landlords owning the least energy efficient domestic PRS properties, many of which are electrically heated, to attempt to improve the energy efficiency of their properties before it can be let out.

[63] Source: 2012 English Housing Survey

[64] For more information on changes to ECO see the impact assessment from July 2014: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/342178/The_Future_of_the_Energy_Company_Obligation_government_Response.pdf

74. Other policies which will support electrically heated households include the Renewable Heat Incentive, which encourages households to install renewable heat measures, such as heat pumps, in return for a tariff payment per unit of heat generated.

5. Business energy bills

Summary

- **Energy costs account for around 3% of operating costs on average for businesses overall, including just under 3% in the manufacturing sector, and around 1-2% for businesses within the CRC.** This compares to 18% for employment costs in the manufacturing sector, for example.
- This implies that **policy costs contribute less than 1% to overall business costs in the manufacturing and wider business sector.**
- **Energy-intensive industries** (whose energy costs represent a significant proportion of operating costs) **are worth around £52bn Gross Value Added (GVA) or 4% of the UK economy, and account for 35% of UK manufactured exports**, supporting around 600,000 jobs directly, and many more in the supply chain.
- **Government measures to help mitigate the impact of policies** for the energy-intensive industries most exposed to international competitiveness risks during the transition to a low-carbon economy will reduce the impact of policies by up to around 80%, subject to State Aid approval.
- Together, with previous announcements, the package announced at Budget 2014 means that eligible **energy intensive industries will be compensated for all current government policy designed to support low carbon and renewable investment up until 2019-20.**

5.1 Context

75. Compared to the household sector, businesses do not face costs or benefits associated with the ECO, Warm Home Discount, or the domestic sector Smart Meter roll-out. However, they do share the costs of supporting low-carbon generation (the non-domestic sector is estimated to pay around two-thirds of the total costs, based on its share of electricity sales)[65] and face specific costs focused on improving business energy efficiency.

76. Policy costs generally represent a larger proportion of total energy costs for businesses compared with households because other components of energy bills, such as supplier

[65] In the absence of any firm evidence of differential pass-through to domestic and non-domestic customers, this analysis is based on the assumption that policy costs are spread evenly across relevant energy sales in the UK. In other words the costs of policies which only apply to households are spread over domestic energy sales and vice versa for non-domestic customers. For more information see Annex B.

costs and margins, are typically lower per unit of energy for businesses due to economies of scale and other factors.[66]

77. For most businesses, energy costs are a small proportion of total business costs – less than 3% on average for the UK manufacturing sector. By contrast, employment costs represent around 18% of the total.[67] This implies that policies are currently adding less than 1% to total business costs in this sector. For those businesses using large amounts of electricity and subject to the CRC Energy Efficiency Scheme, energy costs are around 1-2% of total business costs, suggesting the policy impact is even smaller.[68] However, for a number of energy-intensive industries (such as steel making), higher energy costs can lead to a risk that production and investment in the UK is lost – known as carbon leakage. The government therefore intends to offer relief and compensate those businesses most at risk of carbon leakage, to help offset these increased costs.

78. The following section considers the impact of policies on energy intensive users, medium-sized business users assumed to fall within the CRC, and small business users assumed to fall outside the CRC.

5.2 Energy intensive users

79. Energy intensive users are those businesses that have high energy costs as a share of their total gross value added (GVA). In 2010, energy intensive industries directly accounted for around 4% of total gross value added in the UK and around 2% of the workforce[69] – they also account for around 35% of UK exports of manufactured goods and create indirect value and employment throughout the product supply chain.

80. There is substantial diversity among energy intensive users including the amount of energy they use, their energy mix, and whether or not they generate electricity on-site (thereby avoiding some of the policy costs included in the electricity prices charged by energy suppliers).

Support measures for energy intensive industries

81. Recognising that policy costs can impose potential competitiveness risks, the government has introduced a range of measures (some of which are still subject to State Aid approval) to provide relief for those energy intensive industries most at risk. This package means that eligible EIIs will receive relief or compensation for all government policy designed to support low carbon and renewable investment up until 2019/20. Further detail on this package, including the extent to which eligible EIIs will be exempted or compensated for these policy costs, is set out in Box 7. Relief beyond this period will depend on future fiscal decisions, but the analysis illustrates what the impact would be if relief continued at the same levels to 2020.

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[66] Including the transfer of risk from energy suppliers to industrial energy users who are willing to accept increased price volatility in exchange for a discount.

[67] ONS (2013) Annual Business Survey

[68] DECC (2013) Simplification options for the CRC Energy Efficiency Scheme to help businesses: CRC (Amendment) Order 2013: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/153713/CRC_Simplification_Final_Stage_Impact_Assessment_December_2012__FINAL_IA_GB_.pdf

[69] BIS estimates based on the criterion that energy costs are at least 10% of GVA.

Box 7: Package of support measures for energy intensive industries

The government is committed to ensuring the UK continues to attract business investment, including in the manufacturing sector, and to further the UK's competitiveness during the shift to a low carbon economy. The government has therefore taken forward a number of measures to reduce the impact of energy and climate change policy costs on those energy intensive industries most at risk – primarily those sectors who are electricity intensive (have high electricity costs as a share of GVA) and who are exposed to international competition:[70]

- **Relief from the Climate Change Levy (CCL) of up to 90% for sectors that sign up to Climate Change Agreements (CCAs).** These cover 53 industrial sectors;[71]
- **Fully exempting certain mineralogical and metallurgical processes (such as manufacture of ceramics, and iron and steel) from the CCL from April 2014**,[72] ensuring the UK tax treatment of highly energy intensive processes is in line with tax treatments elsewhere in the EU;
- **A cap on the Carbon Price Support (CPS) rate at £18/tonne of CO_2 from 2016/17 to the end of this decade** to limit any competitive disadvantage created by carbon price differentials between the UK and other countries;
- **Compensation for the indirect costs of EU ETS.** As at the end of October 2014, 53 companies had been paid over £44m, mitigating around 65% of these costs.
- **Compensation for the indirect costs of CPF beginning in summer 2014 and which Budget 2014 extended to 2019/20.** The government received State Aid clearance in May and has paid out over £18m to 50 businesses as at the end of October 2014.
- **An exemption to the CPF from 2015/16 for fuels used to produce good-quality electricity in Combined Heat and Power (CHP) plant for use on site**. The government is consulting with CHP operators with the aim of introducing in spring next year.
- **Compensation from the costs of the RO and small-scale FITs from 2016/17 to 2019/20.** The scheme would compensate EIIs for up to 85% of the cost of the RO and small-scale FITs on electricity bills. This was announced in Budget 2014 and the government set out its proposals for eligibility in a consultation in July 2014 (subject to State Aid approval).
- **An exemption from future low-carbon electricity subsidy costs under CfDs beginning from 2015.** The scheme would exempt EIIs for up to 85% of the cost of CfDs on electricity bills. The government has set out its proposals for eligibility in a consultation in the summer. This relief is subject to State Aid approval.

[70] The latest Commission guidelines state that aid intensity must not exceed 85% of the eligible cost increase.

[71] Further detail is available online at: https://www.gov.uk/government/policies/reducing-demand-for-energy-from-industry-businesses-and-the-public-sector--2/supporting-pages/climate-change-agreements-ccas.

[72] See online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/293969/5128___Exemptions_from_CCL_for_mineralogical_and_metallurgical_processes_guidance_Budget_14_Final_v1.0.pdf.

82. Table 4 below summarises the main results for an energy intensive user that sources its electricity from an energy supplier. The first column for each year reflects an energy intensive user who is eligible for all of the available measures of support, and the second column for each year reflects an energy intensive user who only benefits from the CCL discount available to all users signed up to a Climate Change Agreement (CCA) and the cap on the Carbon Price Support (CPS) rate announced at Budget 2014. These measures will reduce the impact of policies on the energy bills of EIIs eligible for all support by up to around 80% in 2020 (subject to State Aid approval). While the two scenarios present a lower and upper bound of impacts, in reality, many companies and industries will be eligible for a mix of these measures and largely fall in the middle of the range.

83. Further detail on the bill impacts of policies on these users is set out in Annex D.

Table 4: Estimated average impact of policies on gas and electricity bills paid by large energy intensive users compared with bills in the absence of policies[73]

Real 2014 prices, £ million	2014		2020	
	With all support measures	With no support measures[74]	With all support measures	With no support measures
Average **gas bill** without policies	2.2		2.4	
Average **gas bill** with policies	2.2	2.3	2.4	2.5
Impact of policies on **gas bill**	-0.04 -2%	0.03 1%	-0.05 -2%	0.02 1%
Average electricity bill without policies	**6.4**		**7.1**	
Average electricity bill with policies	**7.4**	**7.9**	**7.6**	**10.6**
Impact of policies on electricity bill	**1.0** **15%**	**1.5** **23%**	**0.5** **7%**	**3.5** **50%**
Illustrative energy bill impacts (%)				
Electro-intensive user	14%	21%	6%	46%
Balanced user	11%	17%	5%	37%
Gas intensive user	5%	10%	2%	21%

Source: DECC 2014. Figures presented to the nearest £0.1m, where figures would round to zero, one significant figure is shown. Figures may not sum due to rounding.

84. Chart 13 shows that this relief has a significant impact on reducing the policy impact on electricity bills for eligible sectors. For gas, the only policy cost on bills is the Climate

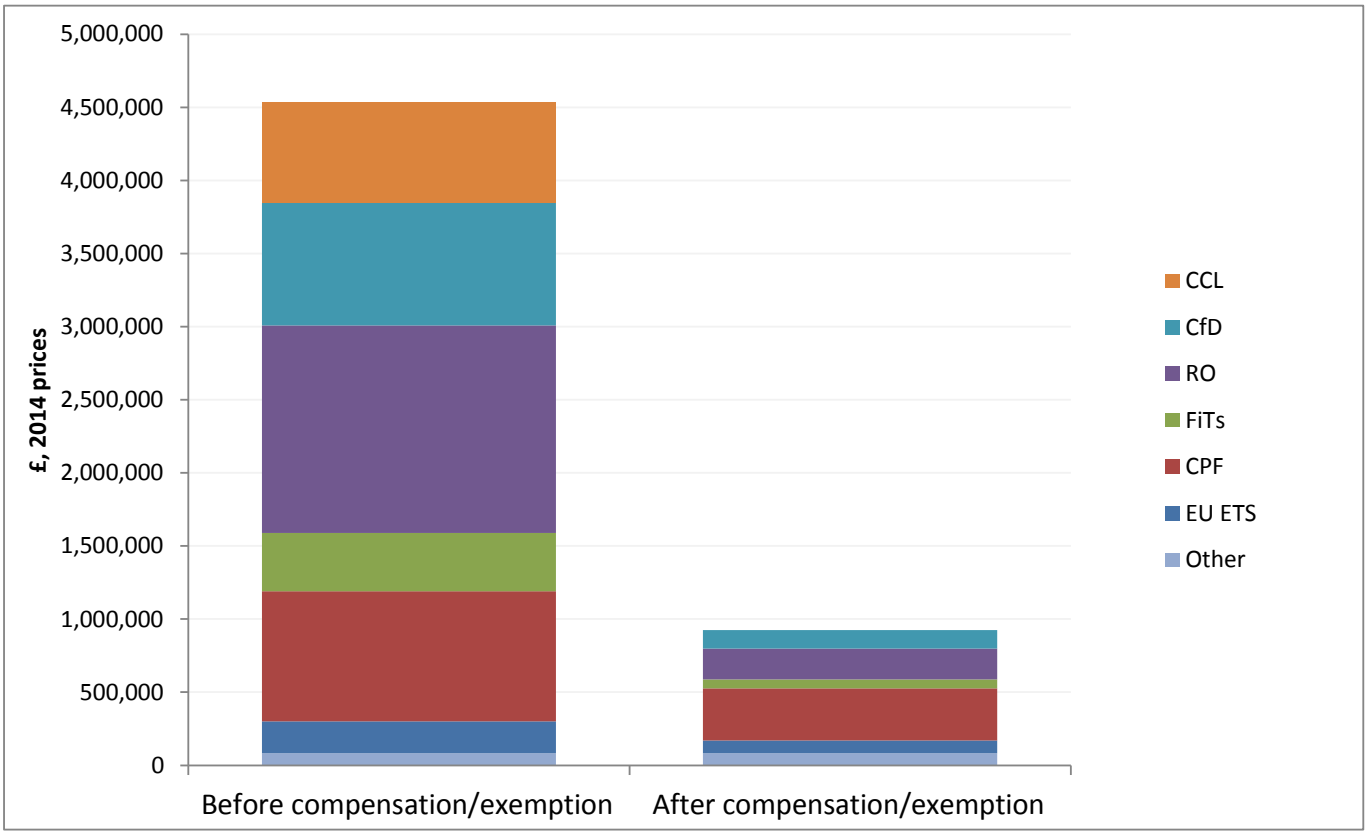
[73] Note that the content of this table has changed compared to the equivalent table in the March 2013 report. Previously the table reflected a range based on whether an EII was on or off the electricity grid (and hence subject to policy costs or not). This year the impacts reflect two different illustrative users, based on whether the user receives relief on policy costs (as described above). 2030 impacts for EIIs are not presented as the impacts remain uncertain as policy for EII compensations and exemptions for this period have not been agreed.

[74] Impacts for the user without support measures include the CCL discount available to all users signed up to a Climate Change Agreement (CCA) and the cap on the Carbon Price Support (CPS) rate announced at Budget 2014.

Change Levy – for which eligible energy intensive businesses receive a discount in return for meeting energy efficiency or carbon saving targets through Climate Change Agreements. In addition to the discount from CCL under CCAs, mineralogical and metallurgical processes (such as manufacture of ceramics, and iron and steel, for example) are exempt from the CCL entirely from April 2014.

85. By 2020, the impact of policies will be reduced by up to around 80% on EII energy bills as a result of the government's package of support (see Annex F).

Chart 13: Estimated impact on a "balanced user's" energy bill of the package of support measures for energy intensive industries in 2020[75]



Source: DECC 2014. "Other" reflects the impact of the Capacity Market gross auction costs and the wholesale price effects.

5.3 Medium-sized CRC business energy users

86. The analysis below has been carried out for businesses that are medium-sized users of gas and electricity and fall within the CRC energy efficiency scheme. The illustrative user is based on the midpoints of Eurostat size-bands for medium-sized gas and electricity consumers in industry.[76] The results of analysis for this illustrative user are set out in Table 5. Further detail on the bill impacts on these users is set out in Annex D.

[75] A balanced user is an energy intensive user assumed to consume 100GWh each of gas and electricity, before the impact of energy efficiency policies.

[76] Medium-sized business users are defined by annual consumption between 2,778 and 27,777MWh of gas and between 2,000 and 19,999MWh of electricity. The midpoints of these ranges have been used for this analysis. Users towards the bottom of this size band are

Table 5: Estimated average impact of policies on gas and electricity bills paid by medium-sized business users – CRC participant[77]

Real 2014 prices, £	2014	2020	2030[78] (See footnote)
Average **gas bill** without policies	420,000	460,000	550,000
Average **gas bill** with policies	480,000	450,000	560,000
Impact of policies on average **gas bill**[79]	60,000 15%	-10,000 -1%	10,000 2%
Average **electricity bill** without policies	820,000	900,000	1,020,000
Average **electricity bill** with policies	1,100,000	1,350,000	1,620,000
Impact of policies on average **electricity bill**	290,000 35%	450,000 50%	600,000 59%
Average energy bill without policies	**1,240,000**	**1,360,000**	**1,570,000**
Average energy bill with policies	**1,580,000**	**1,800,000**	**2,180,000**
Impact of policies on average energy (gas plus electricity) bill	**350,000** **28%**	**450,000** **33%**	**610,000** **39%**

Source: DECC 2014. Numbers may not sum due to rounding. Figures rounded to the nearest £10,000.

87. Overall, businesses that are medium-sized users of energy currently face energy (gas plus electricity) costs that are on average around 28% higher as a result of policies. As discussed earlier, however, energy costs typically form a relatively low proportion of overall costs for the business sector as a whole, including across the manufacturing sector on average (3%). For such a company, an increase of 28% would represent around 1% increase in total costs. For firms within the CRC, which are not classed as energy-intensive but are still relatively large users of energy, total energy costs are generally just 1-2% of the total operating costs in the target sector, suggesting the impact is even lower.

88. Although policy costs are expected to increase between now and 2020, taking the potential for energy-efficiency improvements into account, it is expected the overall impact on bills will be more moderate.

89. The most effective way to reduce energy bills for business is to improve energy efficiency, and the government has a number of schemes to help to this end. The government recently

unlikely to fall within the CRC, but the illustrative user for this analysis is assumed to consume at the midpoint of these ranges. Firms that fall within the CRC include public sector organisations and manufacturing firms not classed as energy intensive (such as textiles, food and drink, plastics, and electrical and mechanical engineering.

[77] It should be noted that these figures do not include the bills savings resulting from the Smart Meters rollout in the non-domestic sector (covering those defined within electricity profile classes 3 and 4 and those with gas consumption below 732 MWh per annum).

[78] As noted elsewhere in the report, the analysis does not include any new energy efficiency policies or extensions to current energy efficiency policies that may be required to meet the 4th Carbon Budget (2023-27) and beyond.

[79] As noted elsewhere in the report, the analysis does not include any new energy efficiency policies or extensions to current energy efficiency policies, reflected in the trends seen in 2020 and 2030 gas bills in this instance.

consulted on Private Rental Sector regulations, which require landlords in the domestic and non-domestic sector to ensure that their properties meet certain minimum energy efficiency standards; it intends to lay the secondary legislation for the Regulations in early 2015.The aim of the CRC energy efficiency scheme is to incentivise cost-effective energy efficiency investment in large commercial, industrial and public sector organisations with annual electricity consumption of 6,000MWh or more, and is estimated to save 48TWh of energy to 2022. Government has also recently published details of the new Energy Savings Opportunity Scheme, which will help business identify energy efficiency measures resulting in bill savings of £35,000 per year on average. The first audits under this scheme will be undertaken by December 2015.[80]

5.4 Small businesses

90. The analysis below has been carried out for businesses that are small-sized users of gas and electricity based on the midpoints of Eurostat size-bands for small-sized gas and electricity consumers in industry.[81]

91. Small-sized business users are not expected to be participants in the CRC Energy Efficiency scheme and therefore do not pay for the associated costs and nor are they expected to make associated energy efficiency savings. Table 6 sets out the average impact of policies on costs of gas and electricity for small-sized business users. Further detail on the energy bill impacts for these users is available in Annex D.

92. Table 6 shows small-sized businesses have lower overall energy bills than other business users, reflecting their lower energy consumption. However, smaller business users will typically pay higher costs per unit of energy than larger users reflecting less potential for economies of scale on certain fixed elements of baseline costs. Given that small-sized businesses also do not participate in the CRC Energy Efficiency scheme the overall impact of policies on bills is lower than for medium-sized business.

[80] See online, at: https://www.gov.uk/energy-savings-opportunity-scheme-esos.

[81] Small-sized business users are defined by annual consumption between 278 and 2,777MWh of gas and between 20 and 499MWh of electricity. The midpoints of these ranges have been used for this analysis.

Table 6: Estimated average impact of policies on gas and electricity bills paid by small-sized business users

Real 2014 prices, £	2014	2020	2030[82] (See footnote)
Average **gas bill** without policies	49,000	52,000	62,000
Average **gas bill** with policies	52,000	55,000	64,000
Impact of policies on average **gas bill**	3,000 6%	3,000 5%	3,000 4%
Average **electricity bill** without policies	22,000	24,000	27,000
Average **electricity bill** with policies	27,000	34,000	41,000
Impact of policies on average **electricity bill**	5,000 21%	10,000 40%	14,000 50%
Average energy bill without policies	**71,000**	**77,000**	**89,000**
Average energy bill with policies	**79,000**	**89,000**	**105,000**
Impact of policies on average energy (gas plus electricity) bill	**8,000** **11%**	**13,000** **16%**	**16,000** **18%**

Source: DECC 2014. Figures may not sum due to rounding.

93.

[82] As noted elsewhere in the report, the analysis does not include any new energy efficiency policies or extensions to current energy efficiency policies that may be required to meet the 4th Carbon Budget (2023-27) and beyond.

6. Uncertainty and sensitivities

94. Estimating the impact of energy and climate change policies on energy bills depends on assumptions made about what prices and consumption would be in a world without policies. Given the level of uncertainty increases as we estimate further into the future (i.e. it is possible to envisage a large number of plausible counterfactuals by making different assumptions on key factors e.g. future fossil fuel prices), sensitivity testing is important to capture the range of possible outcomes.

95. Changes in fossil fuel prices (gas, coal and oil) are the primary drivers of wholesale energy costs. Fossil fuel prices also affect the cost of energy and climate change policies:

- With higher fossil fuel prices, the total costs of energy and climate change policies are generally reduced. Higher fossil fuel prices lower the cost of CfDs since less additional support is required to bring forward investment in low-carbon electricity generation. If fossil fuel prices are lower, more support would be required to bring forward the same amount of low-carbon investment. However the Levy Control Framework – which caps spending on certain government energy policies – will mean costs are controlled, thereby providing protection to consumers against rising costs of energy and climate change policies.
- Higher fossil fuel prices also lead to higher energy prices more generally and thereby increase the value of any energy savings from energy efficiency policies. Conversely, lower energy prices reduce the direct monetary value of energy efficiency savings.

96. The analysis in the previous sections has been based on DECC's September 2014 "Central" fossil fuel price scenario consistent with a wholesale gas price of 60p/therm in 2020, an oil price of $96/bbl in 2020 and a coal price of $94/tonne in 2020 (real 2014 prices). However, this is only one possible state of the world.[83]

97. Table 7 shows the estimated average cumulative impact of energy and climate change policies on the energy bills paid by the illustrative energy users in 2020 and 2030, compared with what they would have been in each of these years in the absence of policies, based on three possible scenarios for fossil fuel prices:

- **"Low" –** Consistent with wholesale gas prices falling to 43p/therm by 2020. Oil prices are assumed to be $85/bbl and coal prices $73/tonne in 2020 (real 2014 prices);
- **"Central" –** Consistent with wholesale gas prices of 60p/therm in 2020. Oil prices are assumed to be $96/bbl and coal prices $94tonne in 2020 (real 2014 prices);
- **"High" –** Consistent with wholesale gas prices rising to 90p/therm by 2020. Oil prices are assumed to be $137/bbl and coal prices $112/tonne in 2020 (real 2014 prices).

[83] DECC fossil fuel prices published as part of the IAG guidance – available at: https://www.gov.uk/government/publications/fossil-fuel-price-projections-2014

Table 7: Estimated average impact of energy and climate change policies on energy (gas plus electricity) bills compared with bills in the absence of policies under different fossil fuel price scenarios

	2020		2030[84] (See footnote)	
	Impact of policies on bills	Bill after policies £2014	Impact of policies on bills	Bill after policies £2014
Household				
Low	-4%	£1,213	4%	£1,297
Central	-7%	£1,319	-4%	£1,524
High	-10%	£1,569	-8%	£1,775
Large energy intensive industrial user[85]				
Low	10% to 50%	£8.5 to 11.6m	N/A	
Central	5% to 37%	£10.0 to 13.0m	N/A	
High	1% to 23%	£12.8 to 15.7m	N/A	
Medium-sized business user – CRC				
Low	45%	£1.6m	72%	£1.9m
Central	33%	£1.8m	39%	£2.2m
High	20%	£2.2m	24%	£2.5m
Small energy user				
Low	21%	£77,000	32%	£84,000
Central	16%	£89,000	18%	£105,000
High	11%	£111,000	12%	£128,000

Source: DECC 2014

98. Under lower fossil fuel prices, policies are expected to add more to energy bills (and save less, on average, on household bills) compared with the other scenarios. However, energy bills for all users would be lower overall than they would be under the "Central" and "High" fossil fuel price scenarios – e.g. household bills are estimated to be £1,213 in 2020 in the Low fossil fuel price scenario, compared to £1,319 and £1569 in the Central and High fossil fuel scenarios respectively.

99. Under the "High" fossil fuel price scenario, the opposite is true: energy bills for all users would be higher in all years than under the "Central" and "Low" scenarios, but the impact of

[84] As noted elsewhere in the report, the 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 (2023-27) and beyond.

[85] These ranges reflect the extent to which the EII is eligible for exemption/compensation measures i.e. including exemption and compensations versus facing all policy costs. 2030 impacts for EIIs are not presented as the impacts remain uncertain as policy for EII compensations and exemptions for this period have not been agreed.

policies would be lower (the average savings from policies on household energy bills would be greater).

100. The costs of small-scale FITs and RO are assumed to be fixed in total, across all fossil fuel price scenarios. The costs of CfDs have been allowed to vary compared with the central fossil fuel price scenario in order to demonstrate, for illustrative purposes, the impact of different fossil fuel price shocks. This should not be interpreted as making a statement about the government's willingness to spend beyond the cap on the LCF. The government will manage its spend to ensure that the costs of LCF policies will remain within the cap. Within the LCF framework there exist a range of provisions to enable us to manage expenditure to ensure we minimise additional impacts on consumer bills.

101. The costs and savings (in MWh terms) from the energy efficiency policies are also assumed to be the same across the three scenarios. In reality, we may observe higher take up of measures under the Green Deal, or small-scale FITs, for example, when fossil fuel prices are high, and it may cost energy suppliers less to incentivise households to take up efficiency measures in order to meet their carbon obligations or for measures to meet the Green Deal Golden Rule. The opposite is likely to be true if fossil fuel prices were lower.

Annex A: Networks

A.1 Electricity Networks

Electricity networks are critical to delivering the government's energy, climate change, and growth objectives. Their main purpose is to transfer electricity from where it is generated to where it is required, from homes to large-scale industrial premises.

Regulation of Electricity Network Charges

Ofgem licenses network companies to own and operate the networks, and regulates expenditure through price control processes, which set out how much companies can spend and what can be passed through to consumers over an eight-year period. The current price control process is known as RIIO.[86] Network companies are then monitored to ensure they are delivering agreed outcomes.

Price Controls for Electricity

The price control for electricity transmission (RIIO-T1) runs from 1 April 2013 to 31 March 2021. Ofgem approved up to £21.5bn[87] of expenditure on onshore electricity transmission.

In addition to onshore transmission, there is currently around £1.4bn[88] of licensed offshore transmission assets connecting 2.4GW[89] of offshore wind generation. By 2020, DECC estimates that there could be between 8GW and 15GW[90] of offshore wind capacity. Through its innovative tender process to appoint offshore transmission owners, the offshore transmission regime has been specifically designed by DECC and Ofgem to harness competitive pressures in order to drive down costs. Analysis commissioned by Ofgem estimates this has resulted in £200–400 million of savings to date.[91]

The price control for electricity distribution (RIIO-ED1) will run from 1 April 2015 to 31 March 2023. Ofgem is in the process of assessing proposed expenditure for RIIO-ED1 electricity distribution price control. Network companies' revised business plans as supplied to Ofgem in March 2014 requested £0.7bn less funding compared to the initial business plans. Ofgem's draft determinations (July 2014) indicated further reductions (£1.4bn). However final determinations of DNO Business Plans are only scheduled to be published in November 2014.

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[86] RIIO stands for Revenue = Incentives + Investment + Outputs – the high-level methodology for determining a network company's allowed revenue.

[87] Announcement of Ofgem's price controls, 5 April 2013

[88] See online, at: https://www.ofgem.gov.uk/ofgem-publications/86034/offshore-transmission-newsletter-issue4feb2014web.pdf.

[89] See online, at: https://www.ofgem.gov.uk/ofgem-publications/51825/es820-offshore-windfarm-map-update-jan2014.pdf.

[90] See online, at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/268221/181213_2013_EMR_Delivery_Plan_FINAL.pdf - page 40.

[91] See online, at: https://www.ofgem.gov.uk/publications-and-updates/consultation-cepabdo-evaluation-offshore-transmission-tender-round-1-benefits.

Drivers of Electricity Network Tariff Profiles

Electricity network tariff profiles are mainly driven by total expenditure (including asset replacement, new build, operation and finance costs), assumptions on regulatory asset life and customers' (i.e. energy suppliers') requests for price stability.

Investment in the electricity transmission and distribution networks is a key part of the energy infrastructure investment package required to keep our lights on. Considerable progress continues to be made in delivering the investment needed, and total expenditure is trending upwards which is driven by a number of factors, including the need to:

- replace and upgrade ageing infrastructure (much of which dates to the 1950s/60s);
- extend the networks to connect new generation;
- accommodate changing flows of energy; and
- ensure continued, reliable day-to-day network operation.

Of total electricity network tariffs, distribution accounts for over three quarters of domestic network charges, with the majority of this reflecting replacement of ageing assets and operational costs to manage the system at local level. Transmission charges account for less than a quarter of electricity network tariffs.

The bulk of electricity transmission expenditure is associated with the cost of connecting new generation in more remote parts of the country and reinforcing more constrained parts of the existing network to improve efficiency of electricity flows across GB.

For electricity distribution, the majority of expenditure relates to replacing ageing assets, for operation costs to manage the system at local level, and to maintain resilience and reliability. Only a small proportion of investment is associated with extending the network.[92] The cost of connecting low carbon technologies at this level is not expected to make a significant impact on network costs until the 2030s.[93]

Ofgem has increased the depreciation period for assets from 20 to 45 years to be more reflective of the actual life of assets and therefore the period over which their cost should be recovered. This causes revenue to increase less steeply than would be expected given the large amounts of investment needed over the period.

DNOs have also responded to customers' (e.g. energy suppliers') requests for price stability and therefore have smoothed out the profiles of their requested allowed revenues.

A.2 Gas Networks

Regulation of Gas Network Charges

As with electricity networks, Ofgem licenses gas network companies to own and operate the networks, and regulates expenditure through the RIIO price control process. The price control framework puts mechanisms in place to ensure network companies deliver the agreed outcomes including incentivising performance.

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[92] Based on Ofgem's Financial Model.

[93] Further detail can be found in the EA Technology report '*Impact of Policy that Drives Low Carbon Technologies on Distribution Networks*' prepared for DECC and published alongside this report.

Price Controls for Gas

The current price controls for gas distribution network companies and the transmission network (RIIO-GD1 and RIIO-T1) run from 1 April 2013 to 31 March 2021.

GB gas networks have agreed £19.9bn expenditure for the current RIIO price control period. Of that, £14.4bn is due to be spent on the distribution network and £5.5bn is due to be spent on the transmission network. This expenditure will in part be recovered during the current RIIO price control period, and partly in future years.

The total nominal allowed revenue Ofgem has permitted under the current RIIO settlement is £7.3bn for gas transmission and £27.8bn for gas distribution (all 2009/10 prices). However actual allowed revenues could turn out to be higher or lower depending on the utilisation made of the uncertainty mechanisms[94] (such as increased costs due to changes in tax liabilities) or any increased revenue that may be allowed under the various incentive mechanisms (for example for an increase in customer satisfaction).

Drivers of Gas Network Tariff Profiles

The factors determining the network charges are largely consistent across the four main gas distribution companies (the single most significant cost relates to the iron mains replacement programme – see further detail below).

- **Investment in the network:** this is the replacement of iron gas mains with polyethylene pipes expected to last at least 80 years. The gas pipeline network has a high safety record and the mains replacement programme builds on this. The replacement plan has been agreed with the Health and Safety Executive and Ofgem manage this long-term process while prioritising the highest risk mains.
- **Maintaining assets:** many network assets were built in the middle of the 20th century and have now reached or exceeded their original design lives. There is a continual programme to extend the life and maintain these assets to keep them while they continue to give good service; nevertheless, many will need replacement.
- **Adapting the network to new sources and uses of energy:** the UK is looking towards a reduction in North Sea supplies, an increase in imports from foreign sources, an uptake of more renewables, and a potential future supply of shale gas; there is a need to adapt the gas infrastructure to meet these changes in supply and demand, and in particular to drive gas from the south to the north.

[94] Introduced to reflect additional uncertainty inherent to longer time period for RIIO (the old price control framework was over a 5 year period and the new one is over an 8 year period). Network companies and Ofgem cannot predict the future but can make estimates on robust assumptions. Through this mechanism Ofgem can adjust expenditure up or down (within agreed overall funding envelope) as uncertain network impacts become clearer. Allows for a more transparent price control with appropriate allocation of risk between companies and consumers.

- **Provision of the gas emergency service:** there is a continuous requirement to undertake maintenance and repairs, which often links to gas distribution call centres that provide emergency response.
- **Non controllable costs:** there are a number of charges that network companies pass through, over which they have no control, such as business rates, taxation, payments to the Transmission system and gas losses (there is an incentive on gas network companies through RIIO to improve their pipes to reduce gas loss).

Annex B: Methodology, assumptions, and policies covered

The results presented in this document are based on analysis of proposals and policies put forward by both the previous and the present government. Only those policies which are already in place or planned to a sufficient degree of detail have been included in the modelling (i.e. with quantified estimates of costs and benefits). In some cases, we have made assumptions about the likely shape of future policies where no government decision to extend has been taken (for example with the ECO, Warm Home Discount, and CCL). Where this is the case, we have set out these assumptions in the relevant sections.

The main changes since the previous report are:

- **Inclusion of the December 2013 package to reduce bills for households by £50 on average in 2014:** this covers changes to the ECO, a £12 government-funded electricity rebate[95], and voluntary deferrals to charges by distribution network operators;
- **Updated electricity market modelling:** reflecting the impact of the cap in the Carbon Price Support rate announced at Budget 2014 and final proposals on Electricity Market Reform;
- **Inclusion of measures to help energy intensive industries**: this covers compensation for the indirect costs of the EU ETS and CPF, RO and FITs, exemptions from the future costs of CfDs, and discounts on the CCL;
- **Updated energy savings from energy efficiency measures**: Updated analysis of previous policies (EEC, CERT and CESP) has led to downward revisions in the estimated energy savings achieved under these schemes. This downward revision primarily reflects updated scientific evidence on the energy savings achieved by the measures installed under these schemes.
- **Clearer presentation**: whilst the underlying modelling methodology has not changed the presentation of the analysis has been simplified to make the impacts of policies clearer, including greater focus on the breakdown of bills as set out in Annex E;
- **Quality assurance of the average prices and bills (APB) model**: The model has recently been independently quality assured by DECC's Modelling Integrity Team with no major issues uncovered, and all recommendations made during their thorough formula audit have since been implemented. The Modelling Integrity Team are confident that the model achieves the design purpose.

Table B1 sets out further detail on the background non-policy assumptions made in this analysis, mainly reflecting changes since the March 2013 report. Table B2 sets out the changes to the policy assumptions in the analysis since the last published report.

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[95] Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/360461/ger_ia.pdf.

Table B1: Methodological assumptions

	Assumptions
Wholesale costs	The wholesale gas price is based on DECC's September 2014 fossil fuel price scenarios. The wholesale electricity price before and after policies is estimated using DECC's Dynamic Dispatch Model. For business and industrial users, a projected annual average baseload price is used. For household users, an annual average volume weighted price is used. In addition to proxy the effect of energy suppliers' hedging strategies on the wholesale costs of supplying energy to residential customers, a one-year lag is applied to the wholesale price for households and an uplift is estimated based on the 5 year average historic difference between actual lagged wholesale prices and wholesale cost estimates published by Ofgem as part of their Supply Market Indicators analysis. This uplift will account for distribution losses, seasonal consumption profiling, and shaping costs.
Balancing costs	Balancing charges for electricity make up less than 1% of the final energy bill. Baseline balancing charges are based on historic National Grid Data from National Grid Monthly Balancing Services Summaries. The historic 5 year average is projected forward.
Network costs	DECC's analysis of electricity network charges to 2030 (estimated for the purposes of this report) shows a broadly flat trend for Distribution Use of System (DUoS) charges and a slightly increasing trend for Transmission Network Use of System (TNUoS) charges. It is important to note that actual DUoS and TNUoS charges are set by individual Distribution Network Operators (DNOs) and National Grid, respectively. DECC's electricity network charge forecasts used in this analysis are based on network operators' revenue forecasts.[96] DECC assumes, for modelling purposes, that current network charges[97] adjust at the same rate as network operators' revenue forecasts, whilst controlling for expected growth in energy demand (i.e. the number of units network revenue is collected over). The revenue forecasts for onshore and offshore electricity transmission operators in this report are based on National Grid's TNUoS model that was built as an add-on to DECC's Dynamic Dispatch Model for the EMR Delivery Plan.[98] The household £/MWh forecasts are calculated by trending on the current £/MWh transmission networks charge (TNUoS, as provided by Ofgem), using the growth rate in allowed

[96] Revenues are the amount network companies are permitted to recover during a price control period to pay for historic investment, as well as the day to day operational and repair costs incurred for maintaining the networks. It is allowed revenue which impacts on consumer bills during a given price control period.

[97] Current Network charges are from Ofgem's Supply Market Indicator analysis. Network charges disaggregated by DUoS and TNUoS were provided directly by Ofgem.

[98] Onshore TO revenue is based on an extrapolation of revenue agreed between Ofgem and TO's for RIIO T1 and Offshore revenue is based on NG's plant level estimation of potential offshore wind projects that they have been notified of. These have been based on RIIO T1 (that use NG's Gone Green Scenario), but have been revised down over this period to reflect less capacity connecting to the offshore and onshore transmission network in the DDM reference case.

	revenue and normalised by growth in demand from DECCs Energy and Emissions Projections (EEP).[99] For electricity distribution charges (DUoS), DECC uses data from Ofgem's distribution price control periods DPCR5 (2010/11-2014/15) and DECC's assessment of RIIO ED1 (2015/16-2022/23) allowed revenue estimates requested by DNOs in their March 2014 business plans. Distribution network charges beyond 2022/23 are informed by projected uptake of low carbon technologies to 2030 as estimated by the Smart Grid Forum (SGF) model.[100] The domestic £/MWh forecasts are calculated by trending on the current £/MWh DUoS (as estimated from Ofgem's household energy bills explained factsheet), using the growth rate in allowed revenues requested by DNOs and normalised by growth in EEP demand. The estimates take into account the voluntary £5 average deferral provided by DNOs for domestic consumers in 2014/15 followed by an assumed recovery of that deferral in 2015/16.[101] Based on the Common Distribution Charging Methodology, the domestic forecast is scaled downwards to estimate non-domestic charges. Gas network charges to 2020 are based on the growth rate in allowed revenue normalised by growth in gas demand (using DECCs EEP gas demand projections) trended on current £/MWh networks charge (provided by Ofgem). For the period beyond 2020 our analysis holds gas network charges fixed at the 2020 level, which we think is a conservative approach in the absence of more information on revenue forecasts. Metering costs are based on historic estimates provided by Ofgem. These figures are small and assumed to stay flat over the projection period.
Consumption	Results for the household sector are based on a representative average demand level for households, derived from historical total domestic consumption as published in DUKES divided by Communities and Local Government (CLG) estimates of the number of households in the UK. The baseline (before the impact of policies) gas and electricity consumption for the average household user are 16.6MWh of gas and 4.5MWh of electricity. Results for the business sector are based on the consumption of a medium-sized fuel user in industry (as defined by Eurostat). Similarly for small-businesses, consumption is based on a small-sized fuel user in industry (as defined by Eurostat). Energy intensive users are taken as those in sectors covered by Climate Change Agreements. The energy bills for these users are based on a range of three different mixes of gas and electricity consumption (before the impact of policies): 160,000MWh gas and 40,000MWh electricity ("gas intensive user"), 100,000MWh each of gas and electricity ("balanced user") and 40,000MWh gas and 160,000MWh of electricity ("electro intensive user"). The baseline level of energy consumption (before the impact of policies) for

[99] Available online at: https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2013

[100] The RIIO ED1 business plans all use scenarios of low carbon technology deployment that are close to the low end of the SGF scenarios range. Therefore, the distribution charges beyond 2022/23 use the upper bound of the SGF's lower quartile.

[101] The £5 deferral is on a financial year basis, but suppliers have passed these on to customers at the beginning of the 2014 calendar year. This underlies the network figures in this report.

	households and business users is assumed to remain constant over the period to 2030 – price elasticity impacts are not therefore taken into account. This facilitates analysis of the impact of policies relative to a baseline. However, the total level of consumption used to spread policy costs is taken from the latest EEP. For policies such as the RO, FITs and EMR, which are obligations related to the supply of electricity, costs are spread evenly over total electricity sales. Electricity sales will reflect the estimated total supply of energy through the public distribution system and sold via retail electricity suppliers. It excludes any electricity consumption supplied from other generators and energy industry own use.
Supplier cost and margins	Household sector supplier operating costs are assumed to stay flat over time and consistent with Ofgem data published in their Supply Market Indicators. Household sector net margins are assumed to be a constant percentage of wholesale costs consistent with the average of the last 5 years' worth of Ofgem data published in their Supply Market Indicators. The business user supplier margins are based on data published by the six largest energy suppliers. Each supplier is obligated by Ofgem to produce a breakdown of their UK revenue and costs from supply of gas and electricity to non-domestic accounts. From this information we have calculated an estimate of fixed unit operating costs and percentage margin. The energy intensive user operating costs per unit are scaled down from the business user estimates according to the scale of their baseline consumption. Margins are assumed to be zero per unit of energy for simplicity.
Estimated impact of policies	This analysis is based on the assumption that policy costs are spread evenly across total energy sales in the UK. The aggregate efficiency savings estimates are also spread evenly across all relevant consumers. The results from the average price and bills model are useful indicators of the overall impact of policies on a particular sector (e.g. the household sector or the business sector). In reality, the heterogeneity among users within the same sector means that the impacts will differ across different households and businesses. For the business sector, impacts will differ depending on the coverage of policies and the scale and mix of energy consumed among other factors. For this reason, the analysis was extended to include three illustrative large energy intensive industrial users and small business users. However, these results remain indicative for these particular subsectors rather than an individual company or site. In the household sector, the impact of policies will differ based on whether or not a household takes up a particular energy efficiency or renewable measure, whether they are eligible for a Warm Home Discount rebate, the type of house, the composition of the household, what the main heating fuel is, etc. For this reason, a separate model was developed to assess the impact of policies across different sets of household users.[102]

[102] For more information on this Distributional Impacts Model for Policy and Strategic Analysis (DIMPSA) please refer to p. 61 of the March 2013 price and bills report, available online at: https://www.gov.uk/government/publications/estimated-impacts-of-energy-and-climate-change-policies-on-energy-prices-and-bills.

	It is important to be aware that the individual policy contributions presented in this document differ from the estimated *marginal* impact of policies set out in individual policy Impact Assessments (IAs). For more information on methodology see Annex E.
Bills	The bill without policies is calculated using an estimated energy price without policies, including VAT (for households), and multiplying by baseline energy consumption.

Table B2: Policy assumptions

Policy	Notes
Building/boiler Regulations	The savings used in this analysis reflect the impact of boiler regulations introduced since 2002. These are unchanged from the last report.
The Capacity Market (CM)	This year the analysis splits out the impact of EMR into Contracts for Difference and the Capacity Market. The cost of the Capacity Market reported is £12 in 2020 and £14 in 2030. This represents the 'gross' costs – i.e. the costs associated with the Capacity Market auctions. However, the Capacity Market is designed to incentivise sufficient investment in capacity to ensure security of electricity supply. In the absence of the Capacity Market there is a significant risk that the market will no longer deliver an adequate level of security of supply, risking low supply margins and spikes in wholesale prices. It is not possible to predict in exactly what year these price spikes would occur, but modelling suggests that the impact of the increase in the wholesale price caused by shortages of supply could be up to around £120 on household bills in the year(s) it occurred. Taking these impacts into account, the net impact of the Capacity Market is estimated to be an increase in average annual household bills of just £2 over the period 2016 to 2030.[103]
Climate Change Agreements (CCA)	CCAs allow eligible energy intensive businesses to receive a discount on the CCL (see next box) in return for meeting energy efficiency or carbon saving targets. Savings presented are net of savings already accounted for under Products Policy to avoid double counting (see box below), and have been estimated in line with the UK's submission complying with the requirements of Article 7 of the Energy Efficiency Directive (Revised June 2014).[104]
Climate Change Levy (CCL)	The government announced the full rates from 1 April 2014 would be £5.41/MWh for electricity and £1.88/MWh for gas. CCL rates are legislated a year in advance. For

[103] The relevant IA is available online, at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/354677/CM_-_revised_IA_and_front_page__September_2014__pdf_-_Adobe_Acrobat.pdf.

[104] See online, at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/307993/uk_national_energy_efficiency_action_plan.pdf .

	modelling purposes, we have assumed here that rates remain constant in real terms to 2030. The analysis assumes a CCA discount is received on the CCL for all delivered electricity and gas consumption by energy intensive users. The discount is assumed to be 65% for gas and 90% for electricity from 2013 in line with the government's 2011 Autumn Statement. Our analysis also illustrates the impact of the 100% exemption for certain mineralogical and metallurgical processes from the CCL from April 2014, in line with the government's Budget 2014 announcement.
Contracts for Difference (CfDs)	This year the analysis splits out the impact of EMR into CfDs and the Capacity Market. Costs of CfDs to 2030 are based on a central decarbonisation trajectory used consistently in analysis of EMR by DECC, namely a trajectory to around 100g CO_2/kWh grid emissions intensity in 2030. This analysis uses DECC's Dynamic Dispatch Model (DDM)[105] to model the GB electricity market including deployment, electricity prices, load factors and retirements.[106] CfDs also drive an offsetting reduction in wholesale prices through increased low carbon generation (which has lower operating costs) which is included separately under Wholesale electricity impacts. For more information on CfDs in the context of the Levy Control Framework (LCF) see 'Renewables Obligation' below. Eligible companies in Electro-Intensive industries (EIIs) will be exempt from a proportion of CfDs costs. The earliest that electricity intensive businesses will be able to claim exemption from CfD costs will be October 2015, subject to State Aid clearance. The government set out its proposals for eligibility in a consultation in July 2014.
CRC Energy Efficiency Scheme (CRC)	The CRC is a mandatory UK-wide scheme introduced in April 2010 which targets unregulated emissions from large public and private sector organisations. It is designed to incentivise the uptake of cost-effective energy efficiency opportunities through the application of additional financial and reputational drivers. The savings presented in the report are net of products policy savings to avoid double-counting and are consistent with the government's Impact Assessment on finalising the simplification of the Scheme[107] which accounts for the effects on the CRC of the exemption for mineralogical and metallurgical processes from the CCL, in line with the government's Budget 2014 announcement.
EU Emissions Trading System (EU	The CPF is designed to top up the carbon price to a target level and therefore the projected impact of the policy on bills depends on the underlying assumption for the

[105] See online, at: https://www.gov.uk/government/publications/dynamic-dispatch-model-ddm.

[106] For more information on DECC modelling of the electricity market, please refer to the documents supporting the first EMR delivery plan. Available online, at: https://www.gov.uk/government/publications/electricity-market-reform-delivery-plan.

[107] DECC (2014) 'Finalising CRC simplification: treatment of renewable energy & the metallurgical and mineralogical sectors – government Response. Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/289117/Amendment_Order_-_Final_Impact_Assessment_05-03-2014.pdf.

ETS) and Carbon Price Floor (CPF)

EUA price, except for in the years for which the Carbon Price Support (CPS) has already been announced or capped (see below). The carbon price assumptions used in this analysis are based on DECCs modelled carbon prices.[108]

Due to uncertainty over the EUA prices beyond 2030, a combined total carbon price impact is presented for 2030 in the tables in the Annex.

The confirmed CPS rates to date are (in nominal terms):

Year	Confirmed rates (£/tCO_2)
2013/14	4.94
2014/15	9.55
2015/16	18.08
2016/17	18.00

CPS rates are assumed to be capped at £18/tCO2 (in nominal terms) from 2016/17 to 2019/20 in line with announcements at Budget 2014. After this, CPS rates are assumed to rise in a way such that the total carbon price faced by UK power generators increases linearly to meet the original CPF trajectory over the course of 5 years, eventually reaching £70/tCO2 in 2030 (in real 2009 terms).

Note that this is purely an analytical assumption and does not reflect government policy. The government remains committed to the CPF as a means to stimulate investment in low carbon infrastructure, but has capped the CPS to limit any competitive disadvantage British companies face in the global market. The government will review the CPF trajectory for the 2020s, including whether a continued cap on the CPS might be necessary, once the direction of reform of the EU ETS and broader 2030 Climate and Energy package is clearer.

The results presented assume full cost pass through of the carbon price faced by the marginal generator to end use consumers regardless of whether EU allowances are allocated free of charge to generators or are purchased from auctions or the secondary carbon market.

Different consumption patterns can lead to differences in carbon cost (EU ETS and CPF) impacts across different users reflecting any differences in marginal generating plant weighted over their daily consumption profiles.

The carbon cost impact is estimated by using a “marginal emissions factor” (MEF) reflecting the average annual carbon intensity of the marginal generating plants over the year. DECC commissioned Lane Clark & Peacock LLP and EnAppSys to undertake analysis of historical MEFs in the GB wholesale market from 2010 to 2013.[109] Extending this analysis out to 2014 year to date has informed our assumption of a MEF of 0.5tCO_2/MWh in 2014. This reflects that, while gas generation will mostly be setting the price, there will have been instances over the year when coal plant will have also been marginal. Going forward, our assumptions for the marginal emission factor of 0.4tCO_2/MWh in 2020 and 0.3tCO_2/MWh in 2030 are based on DECC modelling which suggests that gas-fired generation will mostly

[108] Available online at: https://www.gov.uk/government/collections/carbon-valuation--2.
[109] Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/357753/MEF_Analysis_-_Report_FINAL.pdf.

	be the price setting plant in the coming years with, potentially, an increasing role for lower-carbon plant at the margin by 2030. Electricity generation investment and dispatch decisions are held constant as the impact of policies on them is separately attributed to the "Wholesale electricity price impacts (merit order effects)" element (described below). This analysis has not considered the direct costs of the EU ETS (i.e. the cost to businesses covered by the system of purchasing carbon allowances). As set out at Budget 2014; eligible energy-intensive industries will be compensated for the indirect costs of the EU ETS and CPF until 2019/20.
Small-scale Feed-in-Tariffs (FITs)	The costs and savings associated with small-scale feed-in-tariffs in this report are based on the numbers used in the final Electricity Market Reform (EMR) delivery plan in December 2013.[110] The analysis factors in the package of measures announced at Budget 2014 (which is still subject to State Aid approval); eligible energy-intensive industries will be compensated for up to 85% of the costs of small-scale FITs on electricity bills from 2016/17 to 2019/20. The government set out its proposals for eligibility in a consultation in July 2014.[111]
Government Electricity Rebate (GER)	As part of the Autumn Statement 2013, the government announced a £12 nominal rebate to be made on the accounts of domestic electricity customers in 2014 and 2015. The estimated impacts of the rebate are set out in the June 2014 Government Electricity Rebate Final Impact Assessment.[112]
Green Deal and Energy Company Obligation (ECO)	The ECO policy package analysed in this assessment is consistent with the policy package announced in the government's response to The Future of the ECO Consultation which was published on 22nd July 2014[113]. The ECO policy package reflects changes to the ECO targets currently in legislation for the period to March 2015 to ease the pressure on domestic energy bills and improve the operation of the scheme in light of evidence from of its first year of operation. These changes include a 33% reduction to the original March 2015 Carbon Emissions Reduction Obligation (CERO) carbon target and allowing easy to treat insulation measures to be eligible under this target, extending the eligibility criteria for the Carbon Savings Community Obligation (CSCO) target and incentivising delivery under Affordable Warmth to reach non-gas fuelled households. Further, the government is introducing ECO targets in legislation for an additional two year period to 31 March 2017. Policy on ECO is currently agreed up to 2017. The longer term ECO scenario used in this analysis (beyond 31 March 2017) is consistent with the longer term ECO scenario set out in the 22 July Final ECO Impact Assessment. This scenario reflects

[110] Available online, at: https://www.gov.uk/government/publications/electricity-market-reform-delivery-plan.

[111] Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/359649/BIS_14_995-EIIs_-_Relief_from_the_indirect_costs_of_Renewables_-_consultation_on_eligibility_revised_doc.pdf.

[112] government Electricity Rebate Impact Assessment available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/360461/ger_ia.pdf.

[113] Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/342178/The_Future_of_the_Energy_Company_Obligation_government_Response.pdf.

	the government's ambition for a longer term and ambitious obligation policy. The main analysis presents a combined impact of the Green Deal and ECO on households, encompassing the cost impact of the ECO support and the average efficiency saving from both ECO and Green Deal measures. We have excluded the cost of the Green Deal loan repayment as this cost is a voluntary means of payment which happens to be collected via bills and is only borne by those consumers who choose to sign up to Green Deal, rather than being an integral part of the cost of energy. To avoid overstating net energy bill savings, we have conservatively assumed that work which can be funded under the Green Deal will be, without any supplementary funding sources such as cash. In practice it is possible some people will combine Green Deal finance alongside alternatives which would mean lower energy bills than presented here. The efficiency savings from the household measures include an 'In-Use' factor based on a review of measured versus theoretical energy savings. In addition, it is estimated that approximately 10% of the building stock have parts of their external walls that are inaccessible, reducing performance of installations. In addition, a 15% comfort factor is assumed. The analysis does not include the impact of a non-domestic Green Deal scheme as there are currently no Green Deal finance offers in the non-domestic sector. The legislative framework, however, allows for Green Deal finance in the non-domestic sector and finance providers may come forward to meet demand in the future.
Historic energy efficiency policies	The estimated savings delivered by the Community Energy Savings Programme (CESP), and the Carbon Emissions Reduction Target (CERT) and its predecessors, Energy Efficiency commitments 1 & 2 (EEC1&2), are included in this analysis. We have recently updated our analysis of these policies,[114] which has led to a slight downward revision in the estimated energy savings achieved under these schemes. This downward revision primarily reflects updated scientific evidence on the energy savings achieved by the measures installed under these schemes. The update also makes the estimated energy savings consistent with latest figures on savings from the Green Deal and Energy Company Obligation.
The Private Rental Sector (PRS) Regulations	The PRS Regulations require landlords in the domestic and non-domestic PRS to ensure that their properties meet certain minimum energy efficiency standards. Where improvements must be made in order to meet the standard, these must be made provided there are no net nor upfront costs to the landlord of making these improvements. The Regulations also ensure that domestic private landlords cannot unreasonably refuse tenants' requests to undertake energy efficiency improvements. The analysis contained within this report is derived from the analysis contained within the consultation stage impact assessment for the secondary legislation. Savings presented are net of CRC uptake.

[114] Reports on historic energy efficiency policies are available here: https://www.ofgem.gov.uk/environmental-programmes/energy-companies-obligation-eco/previous-energy-efficiency-schemes

Products Policy	The energy savings used in this analysis are unchanged from the previous report. Recent evidence on Products Policy is available in "Energy efficient products - helping us cut energy use".[115]
Renewable Heat Incentive (RHI)	The distributional analysis in this report captures the effects of take up of renewable heat measures (through fuel switching and incentive payments) using assumptions consistent with the costs and fuel bill savings detailed in the Final Domestic Impact Assessment.[116] The tariffs used in the distributional analysis are available online.[117] The RHI is funded through general taxation rather than a levy on the supply of fossil fuels.
Renewables Obligation (RO)	The impact of the RO is based on projections about RO spending out to 2020/21. There is uncertainty around the projections, as deployment, load factors, and choice of scheme between the RO and CfDs for individual projects is not yet known. Therefore, while there is a single figure presented in this table for the RO bill impact, there is a range of potential outcomes. The RO is part of the LCF, and so any increase (or decrease) in the bill impact of the RO is likely to be accompanied by a corresponding decrease (or increase) in the bill impact of other policies covered by the LCF. Therefore, the total impact of low-carbon support upon consumer bills – as covered by the LCF – will be up to the maximum set out above, though the impact of individual policies may change Costs of the RO to 2030 are consistent with deployment projections out to 2020 and are based on a central decarbonisation trajectory used consistently in analysis of Electricity Market Reform by DECC, namely a trajectory to around 100g CO_2/kWh grid emissions intensity in 2030. This analysis uses DECC's in-house Dynamic Dispatch Model (DDM)[118] to model the GB electricity market including deployment, electricity prices, load factors and retirements.[119] The analysis factors in the package of measures announced at Budget 2014 (which is still subject to State Aid approval); eligible energy-intensive industries will be compensated for up to 85% of the costs of the RO on electricity bills from 2016/17 to 2019/20. The government set out its proposals for eligibility in a consultation in July 2014.
Smart Metering	Smart Metering is a GB-wide investment programme to modernise our outdated metering system and bring it into the digital age. Smart meters will give consumers real time information on their energy consumption to help them manage their energy use, save money and reduce emissions. Smart meters will also result in efficiency savings in the supply of energy, bring an end to estimated billing, lead to easier and faster switching and transform the pre-payment experience. In addition, they are an

[115] Available online at: https://www.gov.uk/government/news/dramatic-fall-in-cost-of-running-household-goods.

[116] Available online, at: https://www.gov.uk/government/consultations/renewable-heat-incentive-proposals-for-a-domestic-scheme.

[117] Available online, at: https://www.ofgem.gov.uk/environmental-programmes/domestic-renewable-heat-incentive/about-domestic-rhi/tariffs-and-payments-domestic-renewable-heat-incentive.

[118] See online, at: https://www.gov.uk/government/publications/dynamic-dispatch-model-ddm.

[119] For more information on DECC modelling of the electricity market, please refer to the documents supporting the first EMR delivery plan. Available online, at: https://www.gov.uk/government/publications/electricity-market-reform-delivery-plan.

	important step towards the development of a smart grid, delivering improved network efficiency and responsiveness. Like any infrastructure project, smart metering involves some cost but those are outweighed by the savings and the overall effect will be a reduction in energy bills. Energy suppliers will be responsible for replacing over 53 million gas and electricity meters, involving visits to around 30 million homes and small businesses. The main installation phase of smart meters is expected to start in late 2015 and to be completed by the end of 2020. The government is setting the framework for a successful rollout that delivers benefits for and protects consumers. Industry and the private sector will be responsible for delivery and for the investment required. The latest Smart Meter Impact Assessment, published in January 2014, estimated the total present value cost of this programme to be £10.9bn in the period up to 2030. But this needs to be looked at alongside the £17.1bn of benefits the programme delivers, resulting in a very significant net benefit of around £6.2 billion.[120]
Warm Home Discount (WHD)	The Warm Home Discount is a redistributive policy such that its average impact on household energy bills once accounting for the rebate should be zero. The estimated number of rebates delivered and the level of rebate in 2014 are sourced from the December 2013 Warm Home Discount Flexibility Consultation Impact Assessment.[121] The government is currently consulting on extending the Warm Home Discount for an extra year, to 2015/16.[122] For modelling purposes, and consistent with previous years' reports, we have assumed it continues thereafter.
Wholesale electricity price impacts (merit order effects)	The wholesale price effect captures the impact on wholesale electricity prices from changes in the marginal (price-setting) power plant as driven by policies. Policies can affect the price setting plant in two main ways: **Changing the electricity supply mix:** Policies which drive more low operating cost (in this case, low-carbon) technologies into the mix reduce the number of times high operating cost plant need to operate. This results in more instances where lower operating cost plant (e.g. more efficient gas, coal or even low-carbon technologies) are setting the price, reducing the price of electricity. **Reducing electricity demand:** Energy efficiency policies reduce electricity demand which means there is less need for plant with the highest operating costs to generate. This will have the effect of reducing the price of electricity. This effect is estimated to have been relatively small in recent years. However, over time, as more low-carbon generation enters the system, it is expected to increase. The wholesale price impacts have been estimated by comparing the difference between wholesale price projections before and after policies (net of carbon costs). These are modelled using DECC's Dynamic Dispatch Model, and requires making a number of assumptions, particularly about the no policy baseline.[123] The wholesale

[120] Available online, at: https://www.gov.uk/government/publications/smart-meter-roll-out-for-the-domestic-and-small-and-medium-non-domestic-sectors-gb-impact-assessment.

[121] Available online at: https://www.gov.uk/government/consultations/warm-home-discount-flexibility-for-higher-spending.

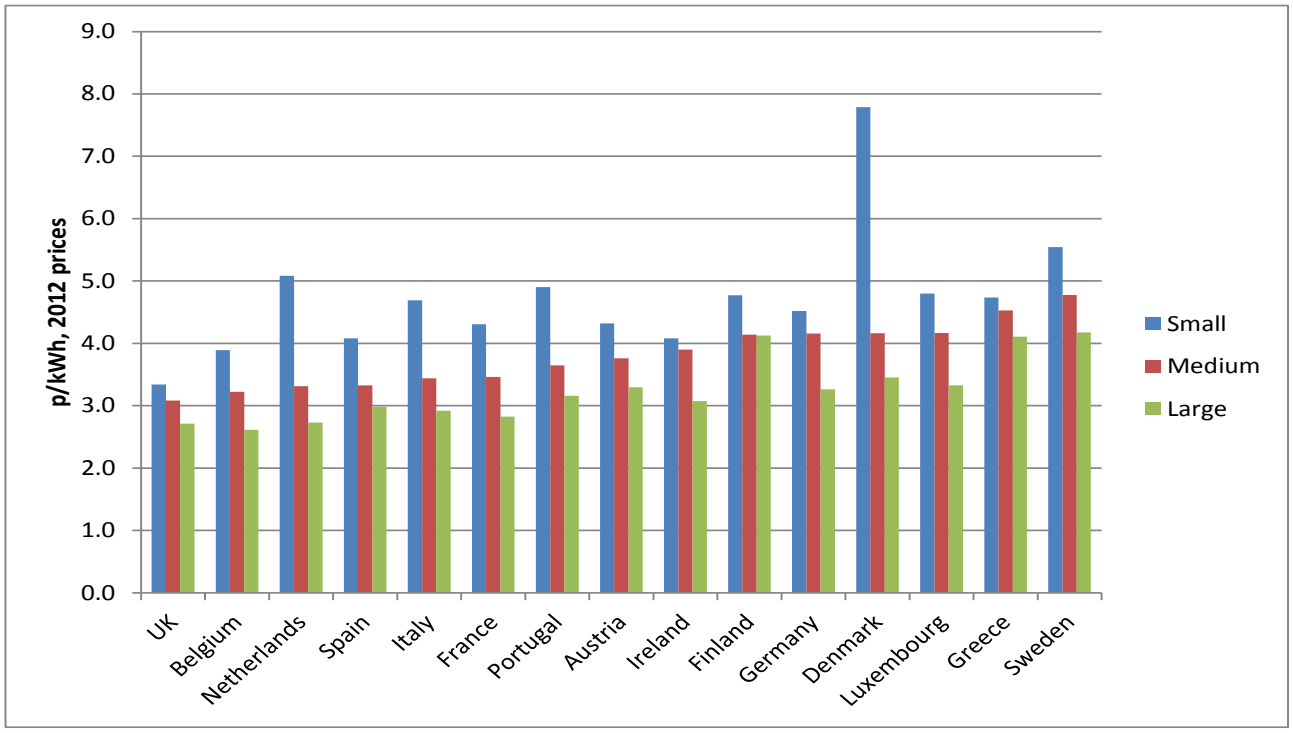
[122] Consultation and Impact Assessment available here: https://www.gov.uk/government/consultations/warm-home-discount-extension-to-201516

[123] Further information on this model is available online at: https://www.gov.uk/government/publications/dynamic-dispatch-model-ddm.

	price in the baseline, and the resulting wholesale price effects are sensitive to the assumptions chosen. However we have used historical trends in build rates and plant characteristics where possible to match capacity margins, and plant efficiencies as closely as possible to what is most likely to have happened in a world without policies.

Annex C: Additional International Comparisons

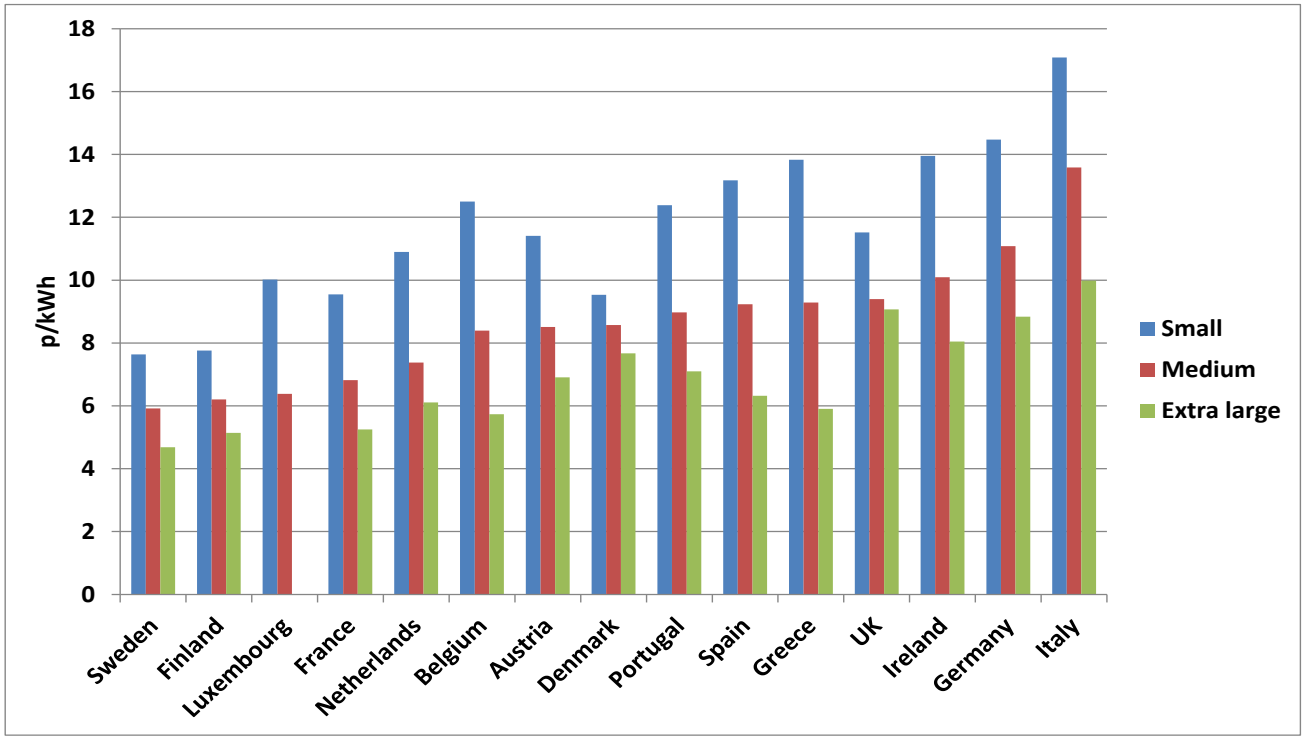
Chart C1: Average gas price (2013) for small, medium and large[124] industrial consumers (p/kWh) in the EU - including taxes



Source: Eurostat data as of June 2014, published in DECC's *Quarterly Energy Prices* available at https://www.gov.uk/government/organisations/department-of-energy-climate-change/about/statistics. Sorted by price paid by medium-sized user.

[124] Small, medium and large industrial gas consumers are assumed to consume between 278- 2,777 MWh, 2,778- 27,777 MWh and 27,778 – 277,777 MWh respectively.

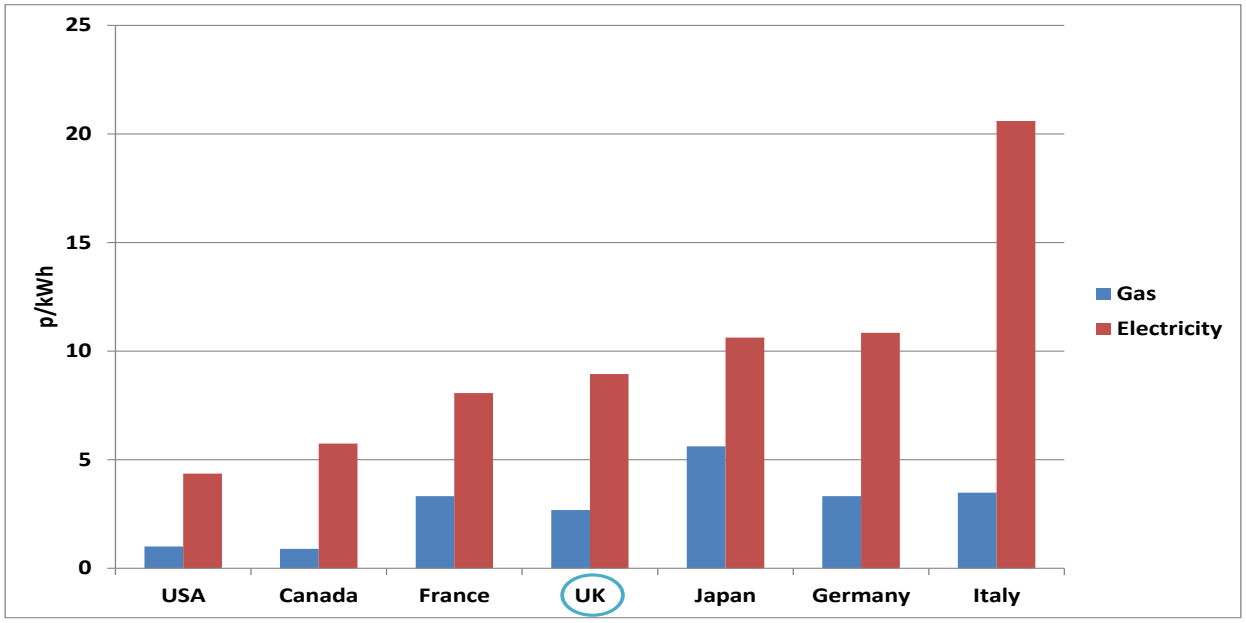
Chart C2: Average electricity price (2013) for small, medium and extra-large[125] industrial consumers (p/kWh) in the EU - including taxes



Source: Eurostat data as of June 2014, published in DECC's *Quarterly Energy Prices* available at https://www.gov.uk/government/organisations/department-of-energy-climate-change/about/statistics. Sorted by price paid by medium-sized user. Note: Does not include impact of exemptions and relief announced for UK businesses in Budget 2014, or any exemptions in other countries.

[125] Small, medium and extra-large industrial electricity consumers are assumed to consume between 20 -499 MWh, 2,000- 19,999 MWh and 70,000 –150,000 MWh respectively.

Chart C3: Average industrial gas and electricity prices (2013) in the G7 (p/kWh)



Source: IEA data published in DECC's *Quarterly Energy Prices* available at https://www.gov.uk/government/organisations/department-of-energy-climate-change/about/statistics. Sorted by electricity prices.

Note: Does not include impact of exemptions and relief announced for UK businesses in Budget 2014, or any exemptions in other countries.

Annex D: Estimated average impact of energy and climate change policies on energy bills

Explaining the change in tables

Bills are a function of price and consumption. Policies will affect one or both elements of the bill. This means that the price impact of one policy will increase the value of efficiency savings from another. In order to avoid double counting this second round effect (which is typically a bill reduction[126]), we must choose whether to account for this effect within the relevant price impact or consumption impact. In previous reports (e.g. Annex F of the March 2013 report), we accounted for this effect within the consumption impacts (i.e. we valued energy efficiency savings at final "after policy" prices, and price impacts of policies were converted to bill impacts using energy consumption before the effect of efficiency savings). However, this often led to the misinterpretation of the cost elements – these did not represent the amount of the final bill spent towards supporting each policy.

In order to avoid this issue, this year we have accounted for the second round effects within the price impacts. All other things being equal, this has the effect of reducing the monetary value of the efficiency savings (which are now valued at prices before the effect of policies) and the bill impact of the price effects. The bill impacts of the price effects in the following tables are now consistent with the amount of the final bill spent towards supporting each policy (as per Annex D of the March 2013 report). The accounting of the overall net impact of policies remains unchanged.

Annex E presents the efficiency savings of each policy affecting the household sector valued at final energy prices to facilitate comparison with previous reports. Equivalent tables for other users are available on request.

[126] Since price impacts are typically positive (bill increases) and consumption impacts are typically negative (bill reductions).

Table D1: Estimated average impact of energy and climate change policies on household energy bills in 2014

Real 2014 prices	2014		
	Gas	Electricity	Dual Fuel
1) Bill before policies (inc VAT)	**£832**	**£627**	**£1,459**
2) Bill impact of energy efficiency savings (ex VAT)[127]	-£76	-£100	-£176
Of which:			
Green Deal and Energy Company Obligation	*£2*[128]	*-£8*	*-£6*
Smart Meters	*-£0.4*	*-£0.5*	*-£1*
Historic energy efficiency policies	*-£31*	*-£36*	*-£67*
Products Policy	*£14*	*-£56*	*-£41*
Building Regulations	*-£61*	-	*-£61*
Private Rental Sector regulations	-	-	-
3) Bill impact of price effects and rebates (ex VAT)[129]	£30	£59	£89
Of which:			
Energy Company Obligation	*£21*	*£15*	*£36*
Smart Meters	*£2*	*£1*	*£3*
Small-scale Feed-in-Tariffs	-	*£9*	*£9*
Renewables Obligation	-	*£36*	*£36*
Contracts-for-Difference	-	-	-
Capacity Market gross auction cost	-	-	-
EU Emissions Trading System carbon cost	-	*£7*	*£7*
Carbon Price Floor carbon cost	-	*£16*	*£16*
Other wholesale price effects of policies	-	*-£5*	*-£5*
Warm Home Discount support	*£7*	*£6*	*£13*
4) Warm Home Discount rebate	-	*-£13*	*-£13*
5) Government Electricity Rebate	-	*-£12*	*-£12*
Bill impact of price effects and GER only (3 - 4)	£30	£72	£102
6) VAT impact of policies (2 + 3 - 4 - 5) x 5%[130]	-£2	-£1	-£3
7) Estimated impact of policies, £ (2 + 3 + 6)	**-£49**	**-£41**	**-£90**
Estimated impact of policies, % (7/1)	**-6%**	**-7%**	**-6%**
Bill after policies (1 + 7)	**£783**	**£586**	**£1,369**
Of which:			
Wholesale energy costs	£402 (51%)	£235 (40%)	£637 (46%)
Network costs	£147 (19%)	£139 (24%)	£286 (21%)
Supplier costs and margin	£167 (21%)	£124 (21%)	£291 (21%)
Energy and climate change policies	£30 (4%)	£59 (10%)	£89 (7%)
VAT @ 5%	£37 (5%)	£29 (5%)	£66 (5%)

Source: DECC 2014. Figures rounded to the nearest £1 except where impacts are below 50p. Figures may not sum due to rounding.

[127] Valued at price before policies, excluding VAT.

[128] Note that the increase in gas bills relates to an increase in gas consumption due to the extent to which the Affordable Warmth element of ECO replaces electric heating with gas boilers.

[129] Multiplied by consumption after policies.

[130] VAT is not applicable to the Warm Home Discount rebate or the government Electricity Rebate.

Table D2: Estimated average impact of energy and climate change policies on household energy bills in 2020

Real 2014 prices	2020		
	Gas	Electricity	Dual Fuel
1) Bill before policies (inc VAT)	**£778**	**£633**	**£1,411**
2) Bill impact of energy efficiency savings (ex VAT)[131]	-£103	-£173	-£276
Of which:			
Green Deal and Energy Company Obligation[132]	*£2*	*-£29*	*-£27*
Smart Meters	*-£12*	*-£15*	*-£26*
Historic energy efficiency policies	*-£26*	*-£22*	*-£47*
Products Policy	*£9*	*-£107*	*-£98*
Building Regulations	*-£77*	-	*-£77*
Private Rental Sector regulations[133]	*-£0.1*	*-£2*	*-£2*
3) Bill impact of price effects and rebates (ex VAT)[134]	£41	£147	£188
Of which:			
Energy Company Obligation	*£32*	*£23*	*£55*
Smart Meters	*£2*	*£1*	*£4*
Small-scale Feed-in-Tariffs	-	*£14*	*£14*
Renewables Obligation	-	*£48*	*£48*
Contracts-for-Difference	-	*£30*	*£30*
Capacity Market gross auction cost	-	*£12*	*£12*
EU Emissions Trading System carbon cost	-	*£7*	*£7*
Carbon Price Floor carbon cost	-	*£30*	*£30*
Other wholesale price effects of policies	-	*-£12*	*-£12*
Warm Home Discount support	*£7*	*£6*	*£12*
4) Warm Home Discount rebate	-	*-£12*	*-£12*
5) Government Electricity Rebate	-	-	-
Bill impact of price effects and GER only (3 - 4)	£41	£159	£200
6) VAT impact of policies (2 + 3 - 4 - 5) x 5%[135]	-£3	-£1	-£4
7) Estimated impact of policies, £ (2 + 3 + 6)	**-£65**	**-£27**	**-£92**
Estimated impact of policies, % (7/1)	**-8%**	**-4%**	**-7%**
Bill after policies (1 + 7)	**£713**	**£606**	**£1,319**
Of which:			
Wholesale energy costs	£348 (49%)	£194 (32%)	£543 (41%)
Network costs	£155 (22%)	£131 (22%)	£286 (22%)
Supplier costs and margin	£135 (19%)	£104 (17%)	£239 (18%)
Energy and climate change policies	£41 (6%)	£147 (24%)	£188 (14%)
VAT @ 5%	£34 (5%)	£29 (5%)	£63 (5%)

Source: DECC 2014. Figures rounded to the nearest £1 except where impacts are below 50p. Figures may not sum due to rounding.

[131] Valued at price before policies, excluding VAT.

[132] Note that the increase in gas bills relates to an increase in gas consumption due to the extent to which the Affordable Warmth element of ECO replaces electric heating with gas boilers.

[133] Private Rental Sector regulations apply to the least efficient properties in England and Wales only.

[134] Multiplied by consumption after policies.

[135] VAT is not applicable to the Warm Home Discount rebate or the government Electricity Rebate.

Table D3: Estimated average impact of energy and climate change policies on household energy bills in 2030

Real 2014 prices	2030[136] (See footnote)		
	Gas	Electricity	Dual Fuel
1) Bill before policies (inc VAT)	**£897**	**£689**	**£1,586**
2) Bill impact of energy efficiency savings (ex VAT)[137]	-£96	-£155	-£251
Of which:			
Green Deal and Energy Company Obligation	*-£6*	*-£19*	*-£25*
Smart Meters	*-£14*	*-£17*	*-£30*
Historic energy efficiency policies	*-£25*	*-£28*	*-£53*
Products Policy	*£6*	*-£90*	*-£84*
Building Regulations	*-£58*	-	*-£58*
Private Rental Sector regulations	*£0.0*	*-£1*	*-£1*
3) Bill impact of price effects and rebates (ex VAT)[138]	-£1	£192	£191
Of which:			
Energy Company Obligation	-	-	-
Smart Meters	*-£7*	*-£5*	*-£12*
Small-scale Feed-in-Tariffs	-	*£13*	*£13*
Renewables Obligation	-	*£30*	*£30*
Contracts-for-Difference	-	*£84*	*£84*
Capacity Market gross auction cost	-	*£14*	*£14*
EU Emissions Trading System carbon cost[139]	-	*£80*	*£80*
Carbon Price Floor carbon cost[140]	-		
Other wholesale price effects of policies	-	*-£17*	*-£17*
Warm Home Discount support	*£6*	*£5*	*£11*
4) Warm Home Discount rebate	-	*-£11*	*-£11*
5) Government Electricity Rebate	-	-	-
Bill impact of price effects and GER only (3 - 4)	-£1	£204	£203
6) VAT impact of policies (2 + 3 - 4 - 5) x 5%[141]	-£5	£2	-£2
7) Estimated impact of policies, £ (2 + 3 + 6)	**-£102**	**£40**	**-£62**
Estimated impact of policies, % (7/1)	**-11%**	**6%**	**-4%**
Bill after policies (1 + 7)	**£795**	**£729**	**£1,524**
Of which:			
Wholesale energy costs	£445 (56%)	£237 (32%)	£682 (45%)
Network costs	£160 (20%)	£141 (19%)	£301 (20%)
Supplier costs and margin	£154 (19%)	£124 (17%)	£277 (18%)
Energy and climate change policies	-£1 (-0.1%)	£192 (26%)	£191 (13%)
VAT @ 5%	£38 (5%)	£35 (5%)	£73 (5%)

Source: DECC 2014. Figures rounded to the nearest £1 except where impacts are below 50p. Figures may not sum due to rounding.

[136] As noted elsewhere in the report, the 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 (2023-27) and beyond.

[137] Valued at price before policies, excluding VAT.

[138] Multiplied by consumption after policies.

[139] Due to uncertainties around EU ETS prices post 2020, the impact of the EU ETS and CPF has been combined.

[140] Due to uncertainties around EU ETS prices post 2020, the impact of the EU ETS and CPF has been combined.

[141] VAT is not applicable to the Warm Home Discount rebate or the government Electricity Rebate.

Table D4: Estimated average impact of energy and climate change policies on energy bills paid by large energy intensive industrial users that benefit from all exemptions and compensations in the EII support package in 2014

Real 2014 prices	2014 Gas	2014 Electricity	2014 Balanced user bill
1) Bill before policies	**£2,234,000**	**£6,396,000**	**£8,631,000**
2) Bill impact of energy efficiency savings[142]	-£38,000	-£146,000	-£183,000
Of which:			
CCAs	*-£38,000*	*-£21,000*	*-£59,000*
Products Policy	*£1,000*	*-£125,000*	*-£124,000*
3) Bill impact of price effects[143]	-	£1,130,000	£1,130,000
Of which:			
Climate Change Levy	-	-	-
Small-scale Feed-in-Tariffs	-	*£233,000*	*£233,000*
Renewables Obligation	-	*£931,000*	*£931,000*
Contracts-for-Difference	-	-	-
Capacity Market gross auction cost	-	-	-
EU Emissions Trading System carbon cost	-	*£80,000*	*£80,000*
Carbon Price Floor carbon cost	-	*£149,000*	*£149,000*
Other wholesale price effects of policies	-	*-£263,000*	*-£263,000*
4) Estimated impact of policies, £ (2 + 3)	**-£38,000**	**£984,000**	**£946,000**
Estimated impact of policies, % (4/1)	**-2%**	**15%**	**11%**
Bill after policies (1 + 4)	**£2,196,000**	**£7,381,000**	**£9,577,000**
Of which:			
Wholesale energy costs	£1,646,000 (75%)	£4,077,000 (55%)	£5,723,000 (60%)
Network costs	£ 506,000 (23%)	£1,982,000 (27%)	£2,488,000 (26%)
Supplier costs and margin	£ 45,000 (2%)	£191,000 (3%)	£236,000 (2%)
Energy and climate change policies	-	£1,130,000 (15%)	£1,130,000 (12%)

Source: DECC 2014. Figures rounded to the nearest £1,000 except where impacts are below £500. Figures may not sum due to rounding.

[142] Valued at price before policies.

[143] Multiplied by consumption after policies.

Table D5: Estimated average impact of energy and climate change policies on energy bills paid by large energy intensive industrial users that benefit from all exemptions and compensations in the EII support package in 2020

Real 2014 prices	2020 Gas	2020 Electricity	2020 Balanced user bill
1) Bill before policies	**£2,440,000**	**£7,073,000**	**£9,513,000**
2) Bill impact of energy efficiency savings[144]	-£48,000	-£432,000	-£480,000
Of which:			
CCAs	*-£49,000*	*£0*	*-£49,000*
Products Policy	*£1,000*	*-£432,000*	*-£432,000*
3) Bill impact of price effects[145]	-	£925,000	£925,000
Of which:			
Climate Change Levy	-	-	-
Small-scale Feed-in-Tariffs	-	*£60,000*	*£60,000*
Renewables Obligation	-	*£213,000*	*£213,000*
Contracts-for-Difference	-	*£126,000*	*£126,000*
Capacity Market gross auction cost	-	*£361,000*	*£361,000*
EU Emissions Trading System carbon cost	-	*£87,000*	*£87,000*
Carbon Price Floor carbon cost	-	*£356,000*	*£356,000*
Other wholesale price effects of policies	-	*-£278,000*	*-£278,000*
4) Estimated impact of policies, £ (2 + 3)	**-£48,000**	**£493,000**	**£445,000**
Estimated impact of policies, % (4/1)	**-2%**	**7%**	**5%**
Bill after policies (1 + 4)	**£2,392,000**	**£7,566,000**	**9,958,000**
Of which:			
Wholesale energy costs	£1,791,000 (75%)	£4,425,000 (58%)	£6,216,000 (62%)
Network costs	£557,000 (23%)	£2,032,000 (27%)	£2,589,000 (26%)
Supplier costs and margin	£44,000 (2%)	£184,000 (2%)	£228,000 (2%)
Energy and climate change policies	-	£925,000 (12%)	£925,000 (9%)

Source: DECC 2014. Figures rounded to the nearest £1,000 except where impacts are below £500. Figures may not sum due to rounding.

2030 impacts for EIIs are not presented as the impacts remain uncertain as policy for EII compensations and exemptions for this period have not been agreed.

[144] Valued at price before policies.

[145] Multiplied by consumption after policies.

Table D6: Estimated average impact of energy and climate change policies on energy bills paid by large energy intensive industrial users that do not benefit from any exemptions or compensations other than the CCL discount that applies to all companies with CCAs in 2014

Real 2014 prices	2014 Gas	2014 Electricity	2014 Balanced user bill
1) Bill before policies	**£2,234,000**	**£6,396,000**	**£8,631,000**
2) Bill impact of energy efficiency savings[146]	-£38,000	-£146,000	-£183,000
Of which:			
CCAs	*-£38,000*	*-£21,000*	*-£59,000*
Products Policy	*£1,000*	*-£125,000*	*-£124,000*
3) Bill impact of price effects[147]	£64,000	£1,608,000	£1,672,000
Of which:			
Climate Change Levy	*£64,000*	*£52,000*	*£117,000*
Small-scale Feed-in-Tariffs	-	*£233,000*	*£233,000*
Renewables Obligation	-	*£931,000*	*£931,000*
Contracts-for-Difference	-	-	-
Capacity Market gross auction cost	-	-	-
EU Emissions Trading System carbon cost	-	*£228,000*	*£228,000*
Carbon Price Floor carbon cost	-	*£427,000*	*£427,000*
Other wholesale price effects of policies	-	*-£263,000*	*-£263,000*
4) Estimated impact of policies, £ (2 + 3)	**£26,000**	**£1,462,000**	**£1,489,000**
Estimated impact of policies, % (4/1)	**1%**	**23%**	**17%**
Bill after policies (1 + 4)	**£2,261,000**	**£7,859,000**	**£10,120,000**
Of which:			
Wholesale energy costs	£1,646,000 (73%)	£4,077,000 (52%)	£5,723,000 (57%)
Network costs	£506,000 (22%)	£1,982,000 (25%)	£2,488,000 (25%)
Supplier costs and margin	£45,000 (2%)	£191,000 (2%)	£236,000 (2%)
Energy and climate change policies	£64,000 (3%)	£1,608,000 (20%)	£1,672,000 (17%)

Source: DECC 2014. Figures rounded to the nearest £1,000 except where impacts are below £500. Figures may not sum due to rounding.

[146] Valued at price before policies.

[147] Multiplied by consumption after policies.

Table D7: Estimated average impact of energy and climate change policies on energy bills paid by large energy intensive industrial users that do not benefit from any exemptions or compensations other than the CCL discount that applies to all companies with CCAs in 2020

Real 2014 prices	2020 Gas	2020 Electricity	2020 Balanced user bill
1) Bill before policies	**£2,440,000**	**£7,073,000**	**£9,513,000**
2) Bill impact of energy efficiency savings[148]	-£48,000	-£432,000	-£480,000
Of which:			
CCAs	*-£49,000*	-	*-£49,000*
Products Policy	*£1,000*	*-£432,000*	*-£432,000*
3) Bill impact of price effects[149]	£64,000	£3,951,000	£4,015,000
Of which:			
Climate Change Levy	*£64,000*	*£50,000*	*£115,000*
Small-scale Feed-in-Tariffs	-	*£399,000*	*£399,000*
Renewables Obligation	-	*£1,418,000*	*£1,418,000*
Contracts-for-Difference	-	*£893,000*	*£893,000*
Capacity Market gross auction cost	-	*£361,000*	*£361,000*
EU Emissions Trading System carbon cost	-	*£218,000*	*£218,000*
Carbon Price Floor carbon cost	-	*£890,000*	*£890,000*
Other wholesale price effects of policies	-	*-£278,000*	*-£278,000*
4) Estimated impact of policies, £ (2 + 3)	**£16,000**	**£3,519,000**	**£3,535,000**
Estimated impact of policies, % (4/1)	**1%**	**50%**	**37%**
Bill after policies (1 + 4)	**£2,456,000**	**10,592,000**	**13,048,000**
Of which:			
Wholesale energy costs	£1,791,000 (73%)	£4,425,000 (42%)	£6,216,000 (48%)
Network costs	£557,000 (23%)	£2,032,000 (19%)	£2,589,000 (20%)
Supplier costs and margin	£44,000 (2%)	£184,000 (2%)	£228,000 (2%)
Energy and climate change policies	£64,000 (3%)	£3,951,000 (37%)	£4,015,000 (31%)

Source: DECC 2014. Figures rounded to the nearest £1,000 except where impacts are below £500. Figures may not sum due to rounding.

2030 impacts for EIIs are not presented as the impacts remain uncertain as policy for EII compensations and exemptions for this period have not been agreed.

[148] Valued at price before policies.

[149] Multiplied by consumption after policies.

Table D8: Estimated average impact of energy and climate change policies on energy bills paid by medium-sized businesses in the CRC in 2014

Real 2014 prices	2014		
	Gas	Electricity	Dual Fuel
1) Bill before policies	**£420,000**	**£818,000**	**£1,238,000**
2) Bill impact of energy efficiency savings[150]	-£13,000	-£25,000	-£37,000
Of which:			
CRC Energy Efficiency Scheme	*-£14,000*	*-£1,000*	*-£14,000*
Products Policy	*£1,000*	*-£24,000*	*-£23,000*
Private Rental Sector Regulations	-	-	-
3) Bill impact of price effects[151]	£74,000	£311,000	£385,000
Of which:			
CRC Energy Efficiency Scheme	*£46,000*	*£84,000*	*£130,000*
Climate Change Levy	*£28,000*	*£57,000*	*£85,000*
Small-scale Feed-in-Tariffs	-	*£25,000*	*£25,000*
Renewables Obligation	-	*£102,000*	*£102,000*
Contracts-for-Difference	-	-	-
Capacity Market gross auction cost	-	-	-
EU Emissions Trading System carbon cost	-	*£25,000*	*£25,000*
Carbon Price Floor carbon cost	-	*£47,000*	*£47,000*
Other wholesale price effects of policies	-	*-£29,000*	*-£29,000*
4) Estimated impact of policies, £ (2 + 3)	**£61,000**	**£286,000**	**£347,000**
Estimated impact of policies, % (4/1)	**15%**	**35%**	**28%**
Bill after policies (1 + 4)	**£481,000**	**£1,104,000**	**£1,585,000**
Of which:			
Wholesale energy costs	£232,000 (48%)	£441,000 (40%)	£673,000 (42%)
Network costs	£96,000 (20%)	£270,000 (24%)	£366,000 (23%)
Supplier costs and margin	£79,000 (16%)	£82,000 (7%)	£161,000 (10%)
Energy and climate change policies	£74,000 (15%)	£311,000 (28%)	£385,000 (24%)

Source: DECC 2014. Figures rounded to the nearest £1,000 except where impacts are below £500. Figures may not sum due to rounding.

[150] Valued at price before policies.

[151] Multiplied by consumption after policies.

Table D9: Estimated average impact of energy and climate change policies on energy bills paid by medium-sized businesses in the CRC in 2020

Real 2014 prices	2020		
	Gas	Electricity	Dual Fuel
1) Bill before policies	**£456,000**	**£900,000**	**£1,357,000**
2) Bill impact of energy efficiency savings[152]	-£69,000	-£66,000	-£135,000
Of which:			
CRC Energy Efficiency Scheme	*-£69,000*	*-£4,000*	*-£72,000*
Products Policy	*£1,000*	*-£62,000*	*-£61,000*
Private Rental Sector Regulations	*-£1,000*	*£0*	*-£1,000*
3) Bill impact of price effects[153]	£65,000	£519,000	£584,000
Of which:			
CRC Energy Efficiency Scheme	*£40,000*	*£41,000*	*£81,000*
Climate Change Levy	*£24,000*	*£55,000*	*£79,000*
Small-scale Feed-in-Tariffs	-	*£43,000*	*£43,000*
Renewables Obligation	-	*£154,000*	*£154,000*
Contracts-for-Difference	-	*£97,000*	*£97,000*
Capacity Market gross auction cost	-	*£39,000*	*£39,000*
EU Emissions Trading System carbon cost	-	*£24,000*	*£24,000*
Carbon Price Floor carbon cost	-	*£97,000*	*£97,000*
Other wholesale price effects of policies	-	*-£30,000*	*-£30,000*
4) Estimated impact of policies, £ (2 + 3)	**-£4,000**	**£453,000**	**£449,000**
Estimated impact of policies, % (4/1)	**-1%**	**50%**	**33%**
Bill after policies (1 + 4)	**£452,000**	**£1,354,000**	**£1,806,000**
Of which:			
Wholesale energy costs	£223,000 (49%)	£477,000 (35%)	£701,000 (39%)
Network costs	£92,000 (20%)	£275,000 (20%)	£368,000 (20%)
Supplier costs and margin	£72,000 (16%)	£82,000 (6%)	£154,000 (9%)
Energy and climate change policies	£65,000 (14%)	£519,000 (38%)	£584,000 (32%)

Source: DECC 2014. Figures rounded to the nearest £1,000 except where impacts are below £500. Figures may not sum due to rounding.

[152] Valued at price before policies.

[153] Multiplied by consumption after policies.

Table D10: Estimated average impact of energy and climate change policies on energy bills paid by medium-sized businesses in the CRC in 2030

Real 2014 prices	2030[154] (See footnote)		
	Gas	Electricity	Dual Fuel
1) Bill before policies	**£551,000**	**£1,022,000**	**£1,573,000**
2) Bill impact of energy efficiency savings[155]	-£59,000	-£58,000	-£117,000
Of which:			
CRC Energy Efficiency Scheme	*-£58,000*	*-*	*-£58,000*
Products Policy	*-£100*	*-£58,000*	*-£58,000*
Private Rental Sector Regulations	*-£1,000*	*£0*	*-£1,000*
3) Bill impact of price effects[156]	£68,000	£660,000	£728,000
Of which:			
CRC Energy Efficiency Scheme	*£42,000*	*£18,000*	*£60,000*
Climate Change Levy	*£25,000*	*£56,000*	*£81,000*
Small-scale Feed-in-Tariffs	*-*	*£39,000*	*£39,000*
Renewables Obligation	*-*	*£91,000*	*£91,000*
Contracts-for-Difference	*-*	*£254,000*	*£254,000*
Capacity Market gross auction cost	*-*	*£42,000*	*£42,000*
EU Emissions Trading System carbon cost[157]	*-*	*£236,00*	*£236,000*
Carbon Price Floor carbon cost[158]	*-*		
Other wholesale price effects of policies	*-*	*-£76,000*	*-£76,000*
4) Estimated impact of policies, £ (2 + 3)	**£9,000**	**£602,000**	**£611,000**
Estimated impact of policies, % (4/1)	**2%**	**59%**	**39%**
Bill after policies (1 + 4)	**£560,000**	**£1,624,000**	**2,184,000**
Of which:			
Wholesale energy costs	£310,000 (55%)	£595,000 (37%)	£905,000 (41%)
Network costs	£97,000 (17%)	£281,000 (17%)	£378,000 (17%)
Supplier costs and margin	£85,000 (15%)	£89,000 (5%)	£174,000 (8%)
Energy and climate change policies	£68,000 (12%)	£660,000 (41%)	£728,000 (33%)

Source: DECC 2014. Figures rounded to the nearest £1,000 except where impacts are below £500. Figures may not sum due to rounding.

[154] As noted elsewhere in the report, the analysis does not include any new energy efficiency policies or extensions to current energy efficiency policies that may be required to meet the 4th Carbon Budget (2023-27) and beyond.

[155] Valued at price before policies.

[156] Multiplied by consumption after policies.

[157] Due to uncertainties around EU ETS prices post 2020, the impact of the EU ETS and CPF has been combined.

[158] Due to uncertainties around EU ETS prices post 2020, the impact of the EU ETS and CPF has been combined.

Table D11: Estimated average impact of energy and climate change policies on energy bills paid by small businesses in 2014

Real 2014 prices	2014		
	Gas	Electricity	Dual Fuel
1) Bill before policies	**£49,000**	**£22,000**	**£71,000**
2) Bill impact of energy efficiency savings[159]	£100	-£700	-£600
Of which:			
Products Policy	*£100*	*-£700*	*-£600*
Private Rental Sector Regulations	-	-	-
3) Bill impact of price effects[160]	£2,900	£5,400	£8,200
Of which:			
Climate Change Levy	*£2,900*	*£1,400*	*£4,200*
Small-scale Feed-in-Tariffs	-	*£600*	*£600*
Renewables Obligation	-	*£2,400*	*£2,400*
Contracts-for-Difference	-	-	-
Capacity Market gross auction cost	-	-	-
EU Emissions Trading System carbon cost	-	*£600*	*£600*
Carbon Price Floor carbon cost	-	*£1,100*	*£1,100*
Other wholesale price effects of policies	-	*-£700*	*-£700*
4) Estimated impact of policies, £ (2 + 3)	**£3,000**	**£5,000**	**£8,000**
Estimated impact of policies, % (4/1)	**6%**	**21%**	**11%**
Bill after policies (1 + 4)	**£52,000**	**£27,000**	**£79,000**
Of which:			
Wholesale energy costs	£31,000 (59%)	£13,000 (49%)	£44,000 (56%)
Network costs	£10,000 (19%)	£6,000 (24%)	£16,000 (21%)
Supplier costs and margin	£8,000 (16%)	£2,000 (7%)	£10,000 (13%)
Energy and climate change policies	£3,000 (6%)	£5,000 (20%)	£8,000 (10%)

Source: DECC 2014. Figures rounded to the nearest £100 except where impacts are below £50. Figures may not sum due to rounding.

[159] Valued at price before policies.

[160] Multiplied by consumption after policies.

Table D12: Estimated average impact of energy and climate change policies on energy bills paid by small businesses in 2020

Real 2014 prices	2020		
	Gas	Electricity	Dual Fuel
1) Bill before policies	**£52,000**	**£24,000**	**£77,000**
2) Bill impact of energy efficiency savings[161]	-£15?10	-£1,700	-£1,700
Of which:			
Products Policy	*£100*	*-£1,700*	*-£1,600*
Private Rental Sector Regulations	*-£100*	*£0*	*-£100*
3) Bill impact of price effects[162]	£2,900	£11,400	£14,200
Of which:			
Climate Change Levy	*£2,900*	*£1,300*	*£4,200*
Small-scale Feed-in-Tariffs	-	*£1,000*	*£1,000*
Renewables Obligation	-	*£3,700*	*£3,700*
Contracts-for-Difference	-	*£2,300*	*£2,300*
Capacity Market gross auction cost	-	*£900*	*£900*
EU Emissions Trading System carbon cost	-	*£600*	*£600*
Carbon Price Floor carbon cost	-	*£2,300*	*£2,300*
Other wholesale price effects of policies	-	*-£700*	*-£700*
4) Estimated impact of policies, £ (2 + 3)	**£3,000**	**£10,000**	**£13,000**
Estimated impact of policies, % (4/1)	**5%**	**40%**	**16%**
Bill after policies (1 + 4)	**£55,000**	**£34,000**	**£89,000**
Of which:			
Wholesale energy costs	£33,000 (60%)	£14,000 (42%)	£47,000 (53%)
Network costs	£11,000 (20%)	£7,000 (19%)	£17,000 (20%)
Supplier costs and margin	£8,000 (15%)	£2,000 (6%)	£10,000 (12%)
Energy and climate change policies	£3,000 (5%)	£11,000 (33%)	£14,000 (16%)

Source: DECC 2014. Figures rounded to the nearest £100 except where impacts are below £50. Figures may not sum due to rounding.

[161] Valued at price before policies.

[162] Multiplied by consumption after policies.

Table D13: Estimated average impact of energy and climate change policies on energy bills paid by small businesses in 2030

Real 2014 prices	2030[163] (See footnote)		
	Gas	Electricity	Dual Fuel
1) Bill before policies	**£62,000**	**£27,000**	**£89,000**
2) Bill impact of energy efficiency savings[164]	-£200	-£1,500	-£1,700
Of which:			
Products Policy	*-£10*	*-£1,500*	*-£1,500*
Private Rental Sector Regulations	*-£100*	*£0*	*-£100*
3) Bill impact of price effects[165]	£2,900	£15,200	£18,000
Of which:			
Climate Change Levy	*£2,900*	*£1,300*	*£4,200*
Small-scale Feed-in-Tariffs	-	*£900*	*£900*
Renewables Obligation	-	*£2,100*	*£2,100*
Contracts-for-Difference	-	*£6,000*	*£6,000*
Capacity Market gross auction cost	-	*£1,000*	*£1,000*
EU Emissions Trading System carbon cost[166]	-	*£5,600*	*£5,600*
Carbon Price Floor carbon cost[167]	-		
Other wholesale price effects of policies	-	*-£1,800*	*-£1,800*
4) Estimated impact of policies, £ (2 + 3)	**£3,000**	**£14,000**	**£16,000**
Estimated impact of policies, % (4/1)	**4%**	**50%**	**18%**
Bill after policies (1 + 4)	**£64,000**	**£41,000**	**£105,000**
Of which:			
Wholesale energy costs	£41,000 (64%)	£17,000 (41%)	£58,000 (55%)
Network costs	£11,000 (17%)	£7,000 (16%)	£17,000 (17%)
Supplier costs and margin	£9,000 (15%)	£2,000 (5%)	£12,000 (11%)
Energy and climate change policies	£3,000 (4%)	£15,000 (37%)	£18,000 (17%)

Source: DECC 2014. Figures rounded to the nearest £100 except where impacts are below £50. Figures may not sum due to rounding.

[163] As noted elsewhere in the report, the analysis does not include any new energy efficiency policies or extensions to current energy efficiency policies that may be required to meet the 4th Carbon Budget (2023-27) and beyond.

[164] Valued at price before policies.

[165] Multiplied by consumption after policies.

[166] Due to uncertainties around EU ETS prices post 2020, the impact of the EU ETS and CPF has been combined.

[167] Due to uncertainties around EU ETS prices post 2020, the impact of the EU ETS and CPF has been combined.

Annex E: Household sector energy efficiency savings

Table E1: Breakdown of average energy efficiency savings for households valued at final energy prices (inc VAT)

Real 2014 prices	Gas	Electricity	Dual Fuel
		2014	
Bill impact of energy efficiency savings valued at final prices (inc VAT)	-£83	-£123	-£206
Of which:			
Green Deal and Energy Company Obligation	*£2*	*-£9*	*-£8*
Smart Meters	*£0*	*-£1*	*-£1*
Historic energy efficiency policies	*-£34*	*-£44*	*-£78*
Products Policy	*£16*	*-£68*	*-£52*
Building Regulations	*-£66*	*£0*	*-£66*
Private Rental Sector regulations	-	-	-
		2020	
Bill impact of energy efficiency savings valued at final prices (inc VAT)	-£115	-£249	-£364
Of which:			
Green Deal and Energy Company Obligation	*£2*	*-£41*	*-£39*
Smart Meters	*-£13*	*-£21*	*-£34*
Historic energy efficiency policies	*-£29*	*-£31*	*-£60*
Products Policy	*£10*	*-£153*	*-£143*
Building Regulations	*-£86*	*£0*	*-£86*
Private Rental Sector regulations	*-£0.1*	*-£2*	*-£2*
		2030[168] (See footnote)	
Bill impact of energy efficiency savings valued at final prices (inc VAT)	-£101	-£228	-£329
Of which:			
Green Deal and Energy Company Obligation	*-£6*	*-£29*	*-£34*
Smart Meters	*-£14*	*-£25*	*-£39*
Historic energy efficiency policies	*-£26*	*-£41*	*-£67*
Products Policy	*£6*	*-£133*	*-£127*
Building Regulations	*-£61*	-	*-£61*
Private Rental Sector regulations	*£0*	*-£1*	*-£1*

Source: DECC 2014. Figures rounded to the nearest £1. Figures may not sum due to rounding.

[168] As noted elsewhere in the report, the 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 (2023-27) and beyond.

Annex F: Estimated impact of the package of support for energy intensive industries in 2020

Table 1: Estimated impact of the package of support for energy intensive industries in 2020

Real 2014 prices	Electricity Bill (£)	Gas Bill (£)	Balanced user bill (£)
Total with all policies before any exemptions/compensation	**10,990,000**	**2,580,000**	**13,570,000**
Of which: Energy and climate change policy costs (a)	*4,350,000*	*180,000*	*4,530,000*
Total impact of exemptions (b)	-3,430,000	-180,000	-3,610,000
Of which:			
EU ETS compensation	*-130,000*	*n/a*	*-130,000*
CPF compensation	*-530,000*	*n/a*	*-530,000*
FITs compensation	*-340,000*		*-340,000*
RO compensation	*-1,210,000*		*-1,210,000*
CfD exemption	*-710,000*		*-710,000*
CCL discount for CCAs	*-450,000*	*- 120,000*	*-570,000*
Additional CCL exemption for met/min	*-50,000*	*- 60,000*	*-110,000*
Total with all exemptions/compensation	**7,570,000**	**2,390,000**	**9,960,000**
Impact on policy costs as a result of package of support (b / a)	**79%**	**-100%**	**-80%**

Source: DECC 2014. Bill figures rounded to the nearest £10,000. Figures may not sum due to rounding.

Contact us

For any queries in relation to any of the enclosed analysis, please contact the Strategic Analysis team at DECC:

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