National Audit Office

Departmental Overview

The performance of the Department of Energy & Climate Change 2013-14

DECEMBER 2014

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The National Audit Office scrutinises public spending for Parliament and is independent of government. The Comptroller and Auditor General (C&AG), Sir Amyas Morse KCB, is an Officer of the House of Commons and leads the NAO, which employs some 820 employees. The C&AG certifies the accounts of all government departments and many other public sector bodies. He has statutory authority to examine and report to Parliament on whether departments and the bodies they fund have used their resources efficiently, effectively, and with economy. Our studies evaluate the value for money of public spending, nationally and locally. Our recommendations and reports on good practice help government improve public services, and our work led to audited savings of £1.1 billion in 2013.

Contents

Introduction

Aim and scope of this briefing

1 The purpose of this report is to provide the Energy and Climate Change Select Committee with a summary of the Department of Energy and Climate Change's activity and performance since September 2013, based primarily on published sources, including the Department's own accounts and the work of the National Audit Office (NAO).

2 Part One focuses on the Department's activity over the past year. Part Two examines developments in this Parliament. Part Three concentrates on NAO analyses of activity over the last year. Part Four takes the form of a case study, looking in greater detail at the electricity market reforms which the Department has been developing over the life of this Parliament.

3 The content of the report has been shared with the Department to ensure that the evidence presented is factually accurate.

Part One

About the Department

The Department's responsibilities

1.1 The Department of Energy & Climate Change (the Department) sets UK energy policy goals and the framework for achieving them. It seeks to promote economic growth by delivering affordable, sustainable and secure energy to the UK, while driving ambitious action on climate change internationally. Its strategic objectives are to:

- secure investment to keep the lights on as we move to a low-carbon economy;
- tackle the threats caused by climate change through pioneering action in the UK and abroad; and
- help to keep energy bills as low as possible.

How the Department is organised

1.2 The Department has responsibility for 9 non-departmental public bodies, the largest of which is the Nuclear Decommissioning Authority (NDA), which is responsible for decommissioning and cleaning up the UK's civil nuclear legacy. The Department also has responsibility for oversight of 4 public corporations:

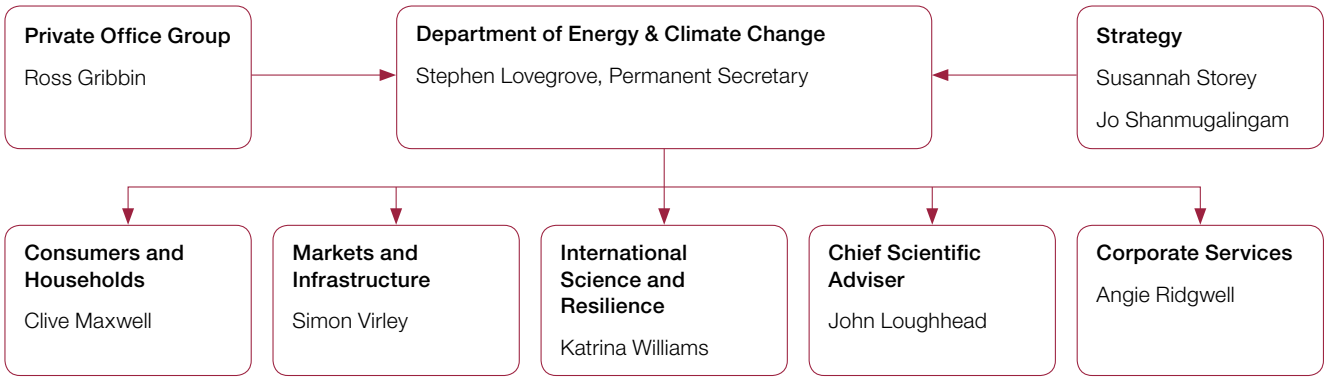
- the Nuclear Liabilities Fund which provides funding to meet certain waste management costs and decommissioning liabilities of 8 nuclear power stations owned by EDF Energy Nuclear Generation Group Limited;
- the National Nuclear Laboratory, an organisation that provides technical support to the nuclear industry; and
- the Low Carbon Contracts Company and the Electricity Settlements Company which provide services in relation to the Department's programme of Electricity Market Reform (EMR).

Appendix One gives a full list of the Department's sponsored bodies as at 1 April 2014.

1.3 A number of the Department's programmes are administered by other organisations. In particular, Ofgem – the regulator of the gas and electricity markets – manages various schemes on the Department's behalf: the Renewables Obligation, the Feed in Tariffs scheme, the Renewable Heat Incentive scheme, and the Energy Companies Obligation.[1] The Department also contracts with other bodies for some policies and services. For example, the Energy Saving Trust runs an energy saving advice service and manages the Renewable Heat Premium Payments scheme on behalf of the Department; and the Environment Agency administers the Carbon Reduction Commitment Energy Efficiency Scheme. In relation to nuclear regulatory matters such as approvals and decommissioning, the Department liaises closely with the Office of Nuclear Regulation (ONR).[2]

1.4 The Department is headed by the Secretary of State for Energy and Climate Change, who chairs the Departmental board. The board forms the collective strategic and corporate leadership of the Department, bringing together ministers and senior civil servants with non-executives. Its responsibilities include setting corporate strategy, agreeing business plans, monitoring the performance of the Department and oversight of sponsored bodies. Since June 2012, the board has been supported by an executive subcommittee chaired by the permanent secretary, which meets twice a month and focuses on the Department's operational management. **Figure 1** shows the current structure of the Department.

Figure 1
How the Department is organised (July 2014)



Note

1 The director-general of Markets and Infrastructure, Simon Virley, has announced his resignation. He will leave the Department on 1 February 2015.

Source: National Audit Office, based on the Department's website organogram of July 2014

1 Ofgem is a non-ministerial department. Following a review in 2011, the government has put in place a memorandum of understanding (MoU) governing the relationship between Ofgem and the Department. Further, more detailed, MoUs relating to the provision of individual services have still to be agreed.

2 The ONR was created on 1 April 2014 as an independent nuclear regulator. It was previously part of the Health and Safety Executive and is sponsored by the Department for Work & Pensions.

1.5 The board has experienced considerable turnover since 2010. There have been 6 ministerial changes, and the current energy minister is now the fourth person to hold that position. The Cabinet Office recommends a minimum of 4 non-executive directors on departmental boards and the Department has operated for most of this Parliament with 3. The Department appointed a fourth non-executive director in October 2014.

Where the Department spends its money

1.6 In 2013-14, the Department's gross expenditure was £4.4 billion. Of this 74% (£3.3 billion) related to the Nuclear Decommissioning Authority (NDA). The remaining expenditure of the core Department was split across:

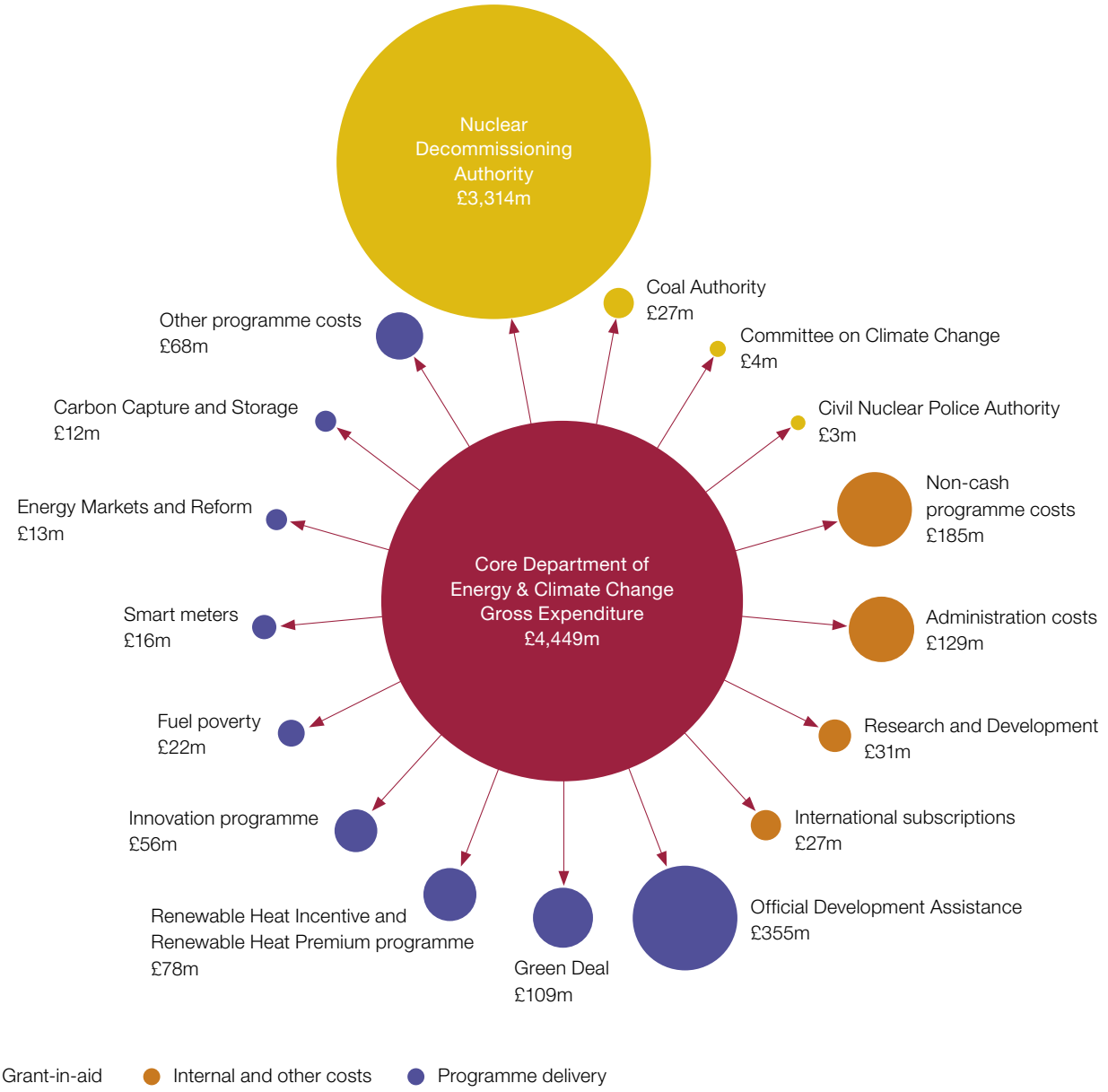
- grant-in-aid to other non-departmental bodies;
- programme costs; and
- internal and other costs (**Figure 2** overleaf).

The NDA also surrendered £1.1 billion of cash receipts from its commercial activities to the consolidated fund, reducing the net cost of funding the Department. This income arises mainly from the sale of reprocessed fuel and from sales of electricity from the Magnox nuclear reactors it owns. The Department also received in 2013-14, a one-off payment of £700 million from the Mineworkers Pension Scheme, following an actuarial review of the value of the fund in relation to future commitments.

1.7 The Department's balance sheet for 2013-14 included a liability of £65 billion as at March 2014 relating to the NDA's provisions for nuclear decommissioning costs. This compares to a liability of £45 billion in March 2010. Future cash flows relating to decommissioning are highly uncertain due to the timescale involved (over a hundred years) and the inherent complexity of the projects. In 2014-15, it is likely that the Department's liabilities will increase substantially as a result of the inclusion of additional liabilities relating to the electricity market reform programme (see Part Four).

Figure 2

Where the core Department spent its money in 2013-14



Notes

1 The figure shows gross expenditure. Total income amounted to £2,111 million and the net operating expenditure of funding the Department after income was £2,338 million. The main components of income comprised £1,085 million of cash receipts from NDA's commercial activities, £700 million in a cash payment from the Mineworkers Pension Scheme and an additional £294 million that is due in future years as a result of a revaluation of that scheme's assets.

2 Funding for the Civil Nuclear Police Authority is for capital spend and redundancy costs only. Running costs are recovered from nuclear site licensing companies.

3 Other programme costs include expenditure on a number of smaller schemes and on consultancy and professional services.

4 Non-cash programme costs relate mainly to an increase in provisions for future costs under the Mineworkers Pension Scheme.

Source: Department of Energy & Climate Change, *Annual Report and Accounts 2013-14*

Staff attitudes

1.8 The government has conducted its Civil Service People Survey annually for the past 5 years. The most recent published survey was carried out during October 2013. Continuing our practice in past briefings, we summarise here the views of the Department's staff on a number of key issues, and compare them to benchmarks for the civil service as a whole. Detailed results for all departments are reproduced at Appendix Two.

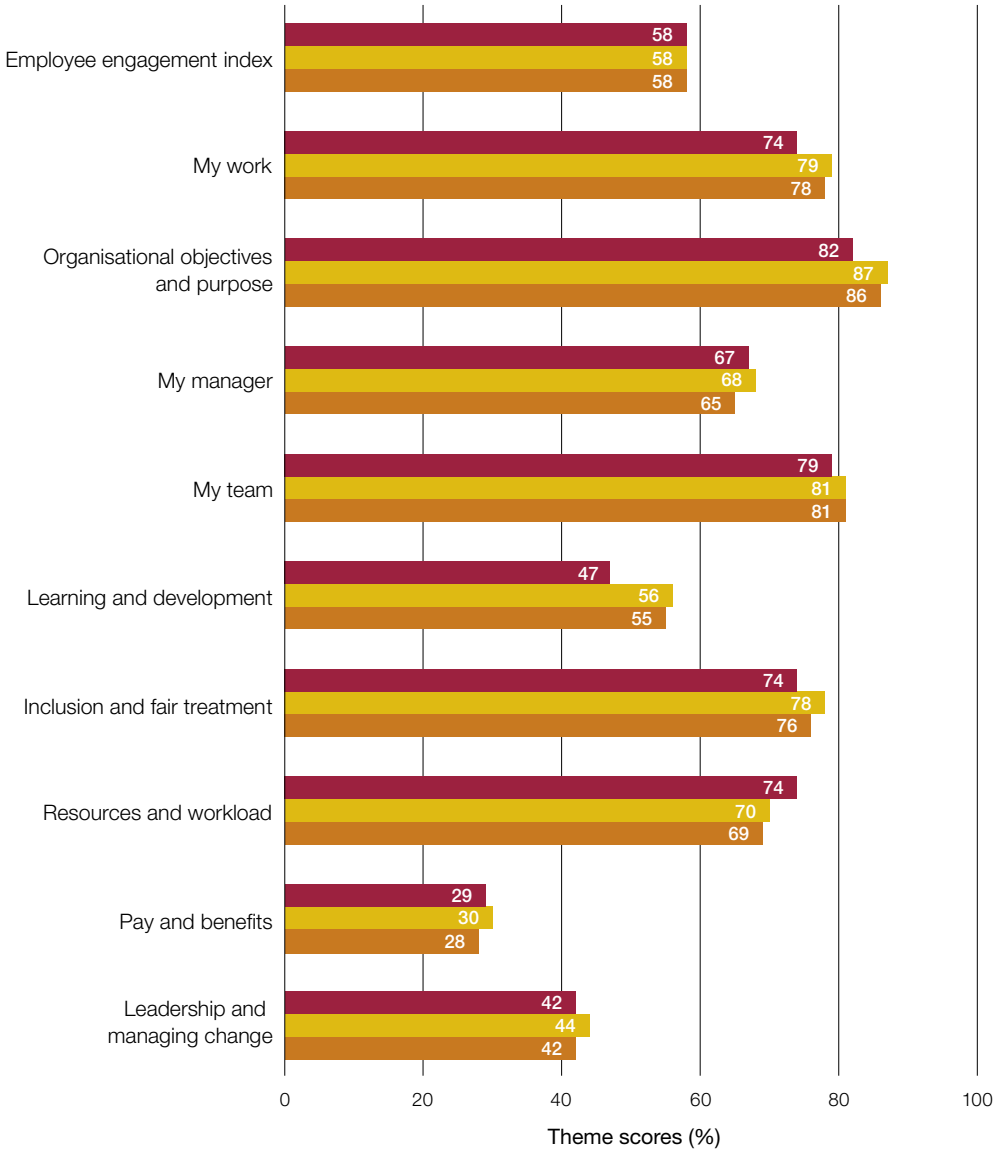
1.9 The Department's scores for each of the themes covered by the Civil Service Survey have improved since the 2012 survey and all but one are now greater or equal to the civil service benchmark (**Figure 3** overleaf). Staff are particularly positive about learning and development opportunities in the Department with scores 9% above the benchmark. The only theme where aggregate scores are below the civil service benchmark (4% below) is for resources and workload, largely due to concern about work-life balance. The Department's staff engagement score – which measures employee commitment to organisational goals and values and motivation to contribute to organisational success – stood at 58%, the same as last year and equal to the civil service benchmark.

1.10 The themes management are most able to influence are 'leadership and managing change' and 'organisational objectives and purpose'. Staff responses to the individual questions in those themes showed satisfaction levels slightly above the civil service benchmark and reflect positive opinions on senior management visibility, communication about important issues, and on the safety to challenge how things are done in the Department (**Figure 4** on page 11). However, less than one in four (24%) staff believes that the board has a clear vision for the future of the Department. This is a decline of 3% against the previous year and is now 18% below the civil service benchmark.[3]

3 Most other central government core departments also score badly on this measure as the average is determined by a large number of associated bodies.

Figure 3

Civil Service People Survey Results 2013: Department of Energy & Climate Change



Notes

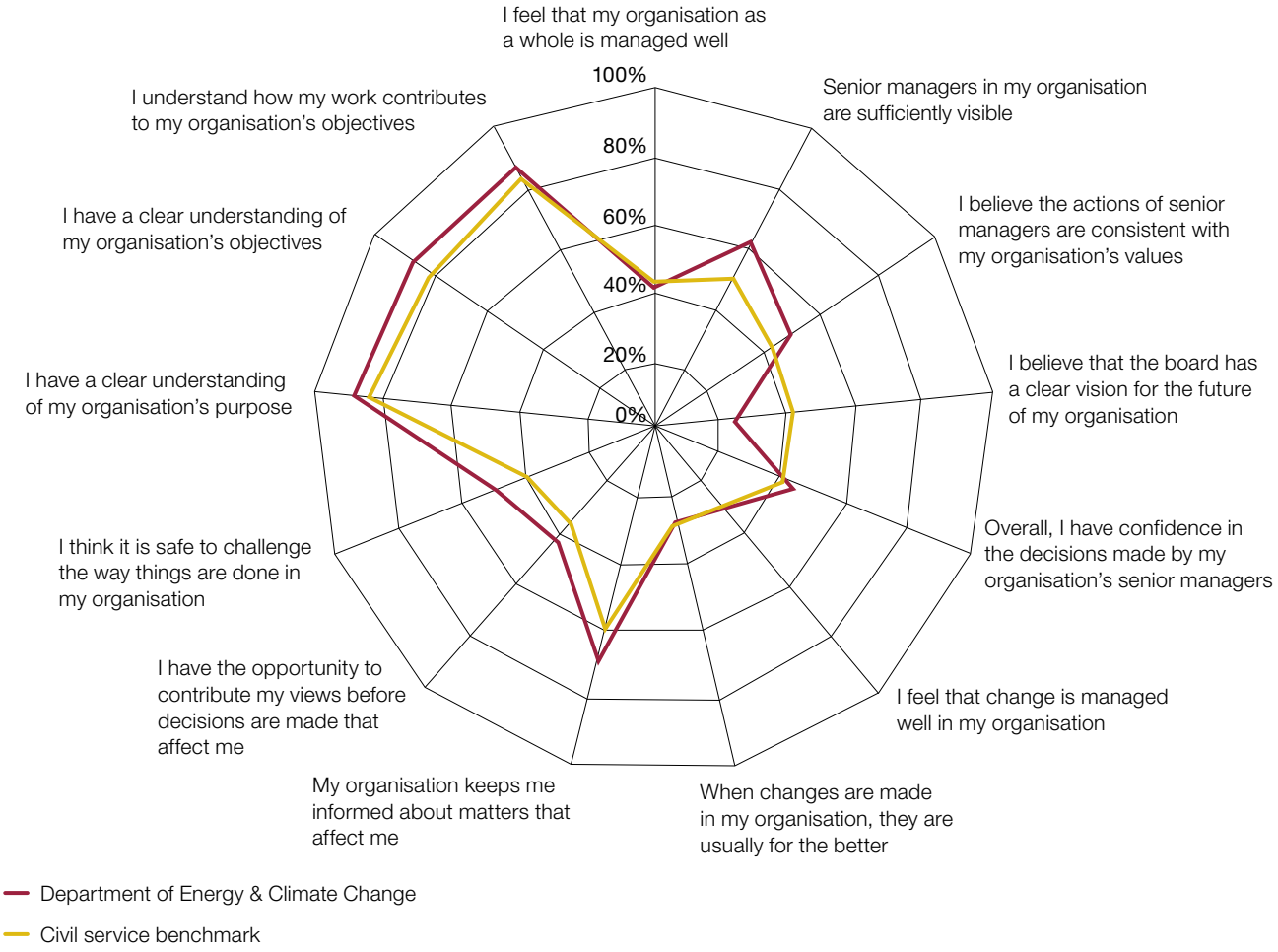
1 Percentage positive measures the proportion of respondents who selected either 'agree' or 'strongly agree' for a question.

2 The 2013 benchmark is the median per cent positive across all organisations that participated in the 2013 Civil Service People Survey.

Source: National Audit Office analysis of the Civil Service People Survey 2013

Figure 4

Detailed breakdown of DECC's staff attitudes to 'leadership and managing change' and 'organisational objectives and purpose' themes



Notes

1 Percentage positive measures the proportion of respondents who selected either 'agree' or 'strongly agree' for a question.

2 The 2013 benchmark is the median per cent positive across all organisations that participated in the 2013 Civil Service People Survey.

Source: National Audit Office analysis of the Civil Service People Survey

Part Two

Developments in this Parliament

Changes to the Department's spending since 2010

2.1 The Department's expenditure has fallen then grown since 2010 (**Figure 5**). In the last year expenditure has increased due to additional expenditure on nuclear decommissioning, Official Development Assistance, and the Green Deal. It is expected to increase further in 2014-15 due to the Government Energy Discount scheme.[4] As a result, while the Department has spent less than its spending review limits in previous years, current forecasts suggest that the Department will spend more than the limits originally set in 2014-15 and 2015-16. Parliament has approved the forecast expenditure for 2014-15 through the Parliamentary estimates process.

Policy and delivery: major developments since 2010 and for the year ahead

2.2 The Department has been responsible for major reforms of policies and programmes since 2010. The main drivers for this have been:

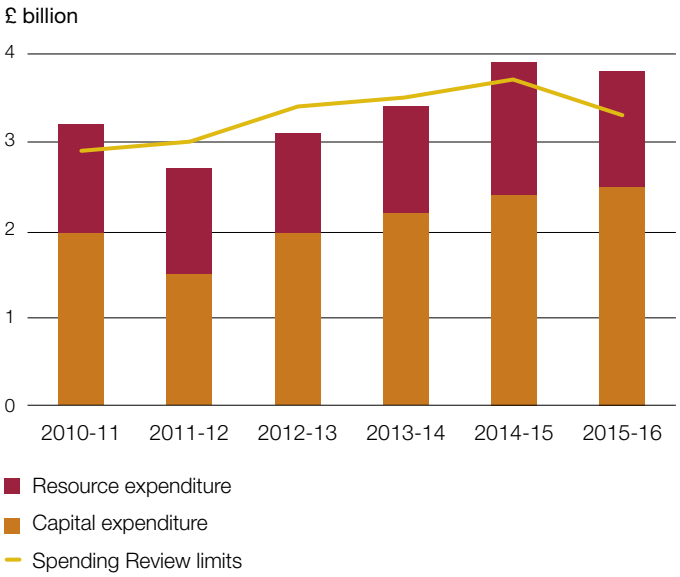
- the 2008 Climate Change Act, which requires the UK to meet challenging greenhouse gas emissions reduction targets;
- EU directives imposing 2020 targets on member states for renewable generation, energy efficiency, and emissions reductions;[5]
- energy security requirements; and
- concerns about the impact of energy policy costs on consumer bills.

4 See paragraphs 2.13 to 2.14 below for the Green Deal. The Government Energy Discount scheme was announced in the 2013 Autumn Statement and provides a one-off rebate to all electricity consumers.

5 The EU targets are for 20% of renewable energy as a proportion of all energy consumption; a 20% increase in energy efficiency; and a reduction of 20% in greenhouse gases. The UK has agreed a statutory target of 15% for renewable energy. The other two targets are non-statutory.

Figure 5

Actual and forecast expenditure since 2010



Notes

1 Resource and capital expenditure is shown on an outturn basis from 2010-11 to 2013-14. The 2014-15 expenditure figure is based on the 2014-15 Parliamentary estimate, and the 2015-16 figure is a forecast included in the 2014-15 estimate.

2 The 2014-15 spending review limit was reduced from £3.7 billion to £3.3 billion in the 2013 spending review due to delays in the Carbon Capture and Storage programme.

Source: National Audit Office/Department of Energy & Climate Change Departmental Accounts

2.3 The most significant of these reforms is the set of policies known as 'Electricity Market Reform' (EMR) which is designed to encourage investment in low carbon electricity and will have considerable impact on UK energy markets. In view of the scale and complexity of EMR, we consider it separately in Part Four.

2.4 In this section we set out other major developments since 2010, which reflect the breadth of the Department's responsibilities:

- energy supply (excluding EMR);
- energy demand;
- controlling the costs of energy for consumers;
- cross-departmental action on climate change;
- international action on climate change; and
- nuclear decommissioning.

Energy supply

2.5 Oil and gas production: Since 2000, UK North Sea production has been steadily falling by around 8% a year, and declining efficiency in recovering reserves is increasing costs. However, a government commissioned independent review by Sir Iain Wood, published in February 2014, has suggested that North Sea oil could contribute an extra £200 billion to the British economy over the next 20 years through the recovery of up to 4 billion barrels of North Sea oil and gas. This would be achieved by increasing the efficiency of recovery, including using depleted fields for the storage of carbon dioxide from generating plants operating with Carbon Capture and Storage. The government has accepted the review's recommendations including the establishment of a new arm's-length body, the Oil and Gas Authority (OGA), with responsibility for maximising recovery of the UK's oil and gas reserves together with associated regulatory functions. The Department has now appointed a Chief Executive Officer for the OGA and expects the OGA to be established as an executive agency from the beginning of April 2015.

2.6 The decommissioning of existing and planned UK North Sea infrastructure will, in the longer term, entail significant costs. A 2012 report by a trade association (Oil and Gas UK) estimated that these costs could amount to £28.7 billion (in 2011 prices) from 2012 onwards, with around £10.3 billion forecast over the first decade.

2.7 The decline in reserves has also led to increasing foreign imports of oil and gas, and concerns about the adequacy of the UK's gas import and storage facilities. Since 2010, there has been some further market investment in Liquified Natural Gas import and storage facilities. The government has provided indirect support in some areas. For example, it provided a £230 million loan guarantee facility in July 2014 to Ineos, a major chemicals company, to support the development of an ethane import and storage facility for its chemical processing complex at Grangemouth.

2.8 Shale gas extraction has had considerable impact on world energy markets. The US shale gas revolution has resulted in large falls in US domestic gas prices and an increase in US exports of cheap coal to the UK and Europe. The International Energy Agency has forecast that shale gas will provide 15% of global gas production by 2030.

2.9 There has been no commercial shale gas production in the UK to date. Estimates suggest that there may be significant quantities available, although the extent of recoverable reserves can only be reliably verified through further exploration.[6] In May 2011, exploratory fracking was suspended after seismic tremors were detected in Lancashire, but was allowed to resume under new controls in late 2012. The industry expects to carry out exploratory drilling in up to 40 sites in the next few years. The government has incentivised shale gas exploration by allowing councils to keep 100% of business rates from shale gas sites and halving the tax rate on early profits from shale gas development. It has proposed legislation to allow deep subsurface exploration under freehold properties. Shale gas developers have also pledged to contribute £100,000 to local communities when a test well is made, and a further 1% of revenues if shale gas or oil is discovered.

2.10 **Carbon Capture and Storage** (CCS) is a process which involves capturing carbon dioxide emissions from fossil fuel generating plants and storing them permanently underground. In 2007, the government launched a competition for a demonstration CCS project. However, it was cancelled in October 2011 because the project could not be funded within the £1 billion budget agreed at the 2010 spending review. We concluded in a report on the project that the competition had been a high risk and challenging undertaking, launched with insufficient planning and recognition of the commercial risks; but that lessons learned from it could inform the future development of CCS.[7]

2.11 Following this, the Department launched a new CCS competition and in March 2013 announced that 2 preferred bidders had been selected – the Peterhead project in Aberdeenshire and the White Rose Project in Yorkshire. The initial awards (made in December 2013 and February 2014) are for design contracts which are expected to take 12 to 15 months to complete. The preferred bidders are then expected to resubmit applications for the main construction phase, agree with DECC the terms of both capital and revenue support, and make their own final investment decisions in early 2016, with a view to the projects becoming operational by 2020. In August 2014, the government published for consultation a policy scoping document which set out its development strategy for CCS. This indicated that up to 13GW of CCS capacity might be deployed by 2030.

6 The British Geological Society was commissioned by the Department to estimate shale gas resources in the Bowland Basin in northern England. The study suggested that there might be 1,300 trillion cubic feet of shale gas in that area. However, the extent of recoverable reserves would be considerably lower.

7 Comptroller and Auditor General, *Carbon capture and storage: lessons from the competition for the first UK demonstration*, Session 2010–2012, HC 1829, National Audit Office, March 2012.

2.12 Security of supply: In view of the concerns about potential shortfalls in electricity generating capacity over the next few winters, in 2014, National Grid gained approval for two new balancing services to provide additional reserve generating capacity and demand reduction. In response to tightening margins of generation over demand, National Grid utilised these services in October 2014 to procure 1.1GW of additional capacity for the winter of 2014-15. The Department considers that this will provide the necessary degree of certainty for times of very high demand.

Energy Demand

2.13 The Green Deal: the government included in the coalition agreement a commitment to introduce the Green Deal to improve household energy efficiency. It began developing it in 2010 and launched it from January 2013. It was launched as an innovative market-led scheme that would provide householders with advice on installing energy saving home improvements and allow them to pay for the up-front cash costs through a loan that is charged to the property and repaid through additions to electricity bills. The first step in the process is to have a Green Deal assessment carried out by an authorised adviser. By September 2014, nearly 360,000 assessments had been carried out and over 5,700 Green Deal Plans were in progress, of which 2,600 were live Green Deal plans in place, with the measures installed and repayments started.[8] The Department carried out a survey in June 2014 which showed that 60% of households who had had a Green Deal assessment in the first three months of 2014 had installed at least one measure, demonstrating that many households go ahead without recourse to a Green Deal finance plan.

2.14 To encourage take-up of the Green Deal, the Department has offered taxpayer funded cashback vouchers to participating households. By June 2014, some 16,500 cashback vouchers had been issued, with an average value of around £800. In June 2014, following a government review of household energy costs, the Department launched a new incentive scheme (the Green Deal Home Improvement Fund) which included a bonus for recent homebuyers. Under this Fund, over 9,000 vouchers were issued in 6 weeks with an average value of £5,400 and a total potential value of £50 million.[9] In response to this demand the government announced that rates would be reduced and this triggered a further surge in applications. As a result, the Department closed the Fund on 24 July 2014 in order to stay within its total budget of £120 million for 2014-15. The Department is considering the lessons from the first phase of the Fund prior to launching a second phase by the end of November 2014.

8 DECC, *Domestic Green Deal and Energy Company Obligation in Great Britain, Monthly report*. Available at: www.gov.uk/government/uploads/system/uploads/attachment_data/file/365408/monthly_statistical_release_green_deal_and_eco_in_gb_21_oct.pdf

9 DECC, *Green Deal Home Improvement Fund (GDHIF) application data*. Available at: www.gov.uk/government/statistics/energy-savings-advice-service-esas-calls-and-green-deal-webpage-views

2.15 The Energy Companies Obligation (ECO): the ECO was launched in January 2013 to complement the Green Deal. It replaced the previous supplier obligation policies and places a regulatory requirement on energy suppliers to achieve certain carbon and bill saving targets in home energy efficiency installations, through funding measures for fuel poor households and hard to treat homes.[10] The costs of ECO are passed on to all energy consumers through their energy bills. Following the government review of household energy costs, in March 2014, the Department announced changes to the ECO, the most significant of which is an extension of 2 years (to March 2017) for suppliers to achieve ECO targets. It also amended the carbon target to admit up to 700,000 easier to treat measures and to set a solid wall insulation target of 100,000 over the life of the extended Obligation. Between January 2013 and August 2014, a total of 940,000 measures had been installed in 777,000 homes. Most of these measures were for cavity wall insulation (36%), replacement boilers (28%) and loft insulation (21%), with 7% for solid wall insulations. In addition, the Department estimates that 105,000 easier to treat measures have been installed following the March 2014 announcement which it expects to qualify as eligible measures once the ECO Amendment Order has been enacted, subject to verification by Ofgem.

2.16 Smart meters: The government has put an obligation on energy suppliers to replace some 53 million existing electricity and gas meters in homes and small businesses in Britain with smart meters by 2020. The expected benefits of the new smart meters include helping consumers manage and reduce energy consumption, improving the accuracy of billing and reducing the costs of energy supply. The Department estimates that the smart meters programme will add an average of £6 a year to the average dual fuel bill in 2015 but will reduce bills by 2017, and enable a household to reduce its dual fuel bill by an average of £43 a year by 2030.

2.17 The Department has led on the design of the technical specifications for smart meters and the communications system, established the regulatory framework and an independent body responsible for public engagement, monitored industry progress towards implementation, and procured the central data and communication services. While mass roll-out of smart meters is not due to start until late 2015, by July 2014, energy suppliers had installed a total of 491,900 domestic smart meters and 561,300 smart and advanced meters in non-domestic premises that are compliant with the latest technical specifications. We published an update report on preparations for smart metering in June 2014 (see paragraphs 3.7 to 3.9).[11]

10 Hard to treat homes include those which are not suitable for conventional cavity wall insulation and those which might require solid wall insulation.

11 Comptroller and Auditor General, *Update on preparations for Smart Metering*, Session 2014-15, HC 167, National Audit Office, June 2014.

2.18 Heat: Domestic and commercial heating is the single biggest component of energy use and is responsible for around a third of the UK's greenhouse gas emissions. Compared to countries such as Denmark, relatively little progress has been made in the UK in increasing combined heat and power (CHP) capacity or developing heat networks.[12] A government review in March 2013 identified a number of recurring issues to overcome, including:

- high up-front costs, particularly for large projects;
- skills requirements (training for installers and heat engineers);
- technical standards (the need to develop standardised design, installation, maintenance and legal requirements for existing technologies); and
- enhancing consumer awareness of the importance of heat in the energy system.

2.19 In response to the review, the Department committed to supporting the district heating industry to develop technical standards for heat networks and to draw up an independent consumer code to replicate the level of protection afforded to customers in the regulated gas and electricity markets. A steering group comprising industry representatives drew up proposals for the code and conducted a public consultation on these proposals in late 2013. It produced revised proposals in May 2014. In addition, the Department has established the Heat Networks Delivery Unit (HNDU) and has extended its life to March 2016. The Unit works with local authorities to help them overcome early stage barriers to establishing heat networks. It is supporting 118 projects from 88 local authorities and has awarded nearly £7 million of grant funding to them. With match funding, the Department expect this to result in over £10 million of investment in heat network exploration in the next 18 months.

2.20 The Renewable Heat Incentive (RHI) provides financial support for renewable heat. The domestic scheme was launched in April 2014 and builds upon the non-domestic scheme launched in November 2011. The scheme provides a subsidy for renewable heating systems, such as heat pumps, biomass boilers and solar thermal panels. Subsidy payments are for 20 years for non-domestic participants and 7 years for domestic participants. The Department's initial forecasts were for expenditure in 2013-14 amounting to £250 million, but non-domestic take-up rates were lower than expected and expenditure in 2013-14 totalled £53 million. An independent evaluation of the non-domestic RHI, published in August 2014, highlighted that only 21% of the wider non-domestic population surveyed were aware of the scheme. The RHI budget has been set only to the end of 2015-16.

12 CHP systems generate electricity and use the heat from this process which would otherwise be wasted. They therefore provide far higher levels of energy efficiency than by generating heat and electricity separately. Most UK CHP systems provide heat for industrial processes, but CHP can also be used to provide domestic heating for surrounding urban areas via heat networks.

Controlling the costs of energy for consumers

2.21 There have been two key developments that relate to efforts to control the costs of energy for consumers: the introduction of the levy control framework; and Ofgem's referral of the energy market to the Competition and Markets Authority (CMA). Both of these we comment on below. Other Departmental initiatives include: a programme of work intended to make it easier for householders to understand their bills, switch suppliers quickly and easily, and ensure that they are on the best energy deal; and a requirement for energy companies to adopt a common simplified set of energy tariffs.

2.22 The Levy Control Framework: A number of the Department's policies are funded by suppliers who then recover their costs from consumers, rather than being funded directly through government expenditure. In recognition of this, the government decided in the 2010 spending review to establish new arrangements to oversee and control the cost to consumers of these levy funded energy schemes, and in March 2011, it established this in the form of the Levy Control Framework (the Framework). The Framework sets financial caps limiting the extent to which the Department can fund policy objectives through energy bills paid by consumers. The Framework covers the Warm Homes Discount scheme, and 3 low carbon energy schemes: the small scale Feed-in tariffs scheme, the Renewables Obligation, and Contracts for Difference.[13] The Framework has imposed a cap of £7.6 billion (discounted, and at 2011-12 prices) on spending on the 3 low carbon schemes in 2020-21.

2.23 To ensure the total cost to consumers stays within annual Framework caps, the Department actively controls the cost of individual levy funded schemes. For the small-scale Feed-in tariffs scheme, it introduced in 2012 an automatic mechanism to reduce the level of subsidy in response to the rate of take-up. For the Renewables Obligation, it has limited access to the scheme for certain types of renewable technology, introducing in 2013 a cap on the amount of dedicated biomass plant capacity which can gain accreditation under the scheme on existing terms. In 2014, it also announced proposals to close the Renewables Obligation early to new solar projects. For Contracts for Difference, the Department intends to control costs through an annual allocation and auction process (see Part Four).

2.24 Competition and Markets Authority (CMA) referral: In June 2014, Ofgem referred the British energy market to the CMA for investigation, the first such referral since the electricity market was established. The CMA will investigate whether the 'big six' energy companies operate as an oligopoly which might prevent, restrict, or distort competition in relation to the purchase and trading of energy. The CMA is likely to take 18 months to complete its investigation.

13 These schemes were designed to promote renewable energy generation. The Renewables Obligation was introduced in 2002 and the small-scale Feed-in tariff in 2010. The Contracts for Difference Scheme has been introduced from 2014 and constitutes the main future policy for supporting renewable energy.

Cross-departmental action on climate change

2.25 The Climate Change Act established a legally binding target to reduce the UK's greenhouse gas emissions by at least 80% from the 1990 baseline by 2050. It also introduced a system of carbon budgets – legally binding limits on emissions for successive 5-year periods, beginning in 2008. The UK has successfully met its first carbon budget covering 2008–2012 and is on track to meet the second and third carbon budgets. Further action will be needed to meet the fourth carbon budget covering 2023–2027 (**Figure 6**). The Department has responsibility for coordinating action across government to meet carbon budgets, as meeting carbon budgets will require radical changes across the economy. Electricity generation contributed over 38% of total UK carbon dioxide emissions in 2013. Transport fuels and natural gas for residential heating contributed a further 25% and 17% respectively.

International action on climate change

2.26 The Department leads UK negotiations on international action to tackle climate change. Key developments in this parliament include:

- In 2010, the UK government set up an International Climate Fund to provide support for developing countries to invest in sustainable energy sources, with funding of £3.9 billion over the period 2011 to 2016, of which the Department would contribute £1.3 billion. Departmental expenditure to the end of September 2014 was £828 million, mainly through contributions to multilateral development banks.

- In February 2014, the European Commission committed to changes to the EU Emissions Trading Scheme (EU ETS) with the aim of improving its effectiveness. The EU ETS requires certain industries to buy allowances for the greenhouse gases they emit and limits the supply of those allowances. However, the price of allowances has fallen by over 70% since 2008, limiting the impact of the scheme. To help tackle this, the European Commission has committed to withdraw some allowances over the period 2014–2016 and only make them available in 2019-20, the last years of the current phase of the scheme (backloading). The European Council has also called for the establishment of a Market Stability Reserve from 2020 in order to regulate the supply of allowances on a continuous basis.

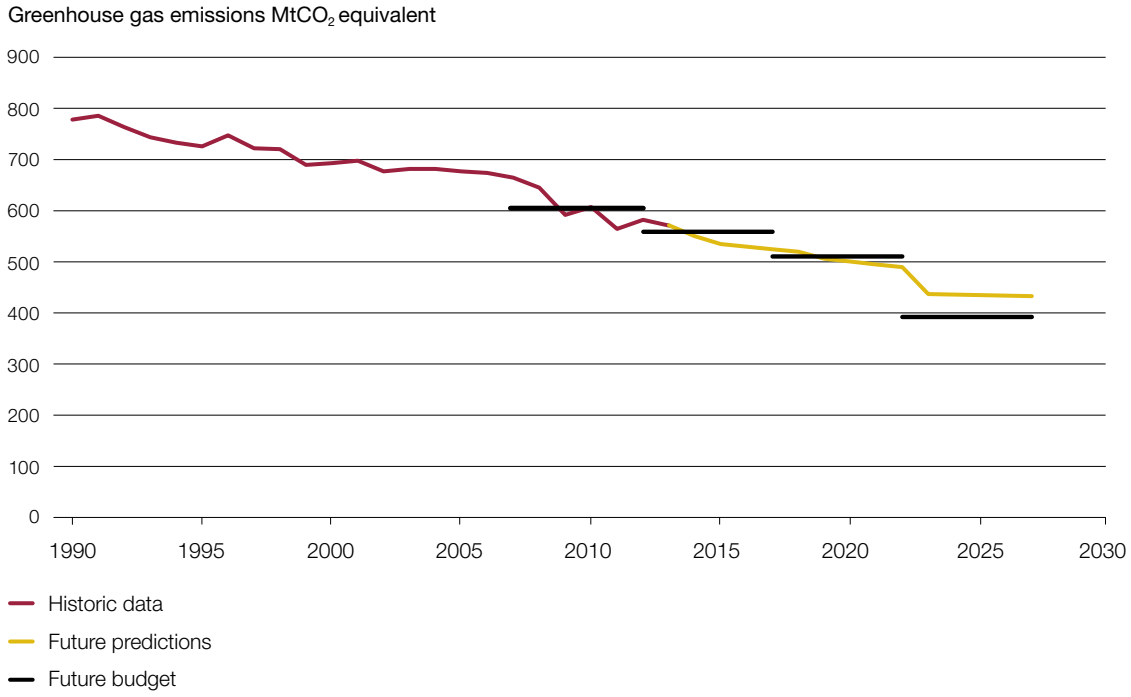
- In October 2014, the European Union agreed to a binding domestic EU greenhouse gas emission reduction target of at least 40% by 2030. This was part of a package of measures intended to make Europe's energy system more sustainable, flexible, affordable and secure. The package also included a 27% EU level renewables target and a 27% non-binding energy efficiency target.

- Within the United Nations Framework Convention on Climate Change, countries are working towards the adoption of a new legally binding agreement applicable to all by 2015, and for it to come into force by 2020.

Figure 6

Actual and projected UK greenhouse gas emissions

UK greenhouse gas emissions (actual and predictions, 1990 to 2027). The government expects to meet the first three carbon budgets, but further carbon-saving policies will have to be adopted to meet the fourth



Notes

1 Figures shown include the UK's share of emissions traded under the EU Emissions Trading Scheme.

2 Figures shown are emissions generated within the UK. The government also estimates the UK's carbon footprint, which takes account of the emissions embedded in the goods and services that the UK imports and exports. On this basis total greenhouse gas emissions are estimated to have been some 870 $MtCO_2e$ in 2011, around half as much again as UK generated emissions in that year. Total greenhouse gas emissions on a consumption basis are classed as experimental statistics because of inherent uncertainties in the data.

Source: National Audit Office, *Environmental protection*, June 2014

Nuclear decommissioning

2.27 The liability for decommissioning the Nuclear Decommissioning Agency's (NDA's) estate has increased over the period of this parliament. Key developments affecting the provision for decommissioning the estate include:

- Changes to the work programme for the Sellafield site, which accounts for more than 70% of the liability for the estate. Sellafield Ltd is a company responsible for carrying out nuclear decommissioning, reprocessing and nuclear waste management on NDA's behalf. In 2013-14, the NDA required Sellafield Ltd to update the site decommissioning plan, with particular emphasis on the next 5 years. This plan was to have been agreed by 1 April 2014, but is now expected to be in place for the start of 2015-16.
- In January 2013, Cumbria County Council rejected proposals to site in Cumbria a long-term disposal facility to store high and intermediate level nuclear waste. NDA's newly formed subsidiary, Radioactive Waste Management Limited, has now been tasked with undertaking a national geological screening exercise to help inform the search for another site.

Independent assessments of the Department's performance

2.28 In Part Three of this report, we look at the NAO's assessment of the Department's performance in 2013-14. Alongside our work and that of the Energy and Climate Change Select Committee, a number of other bodies regularly produce independent analyses of how the Department is doing and the challenges it faces. In this section, we look at some of the most notable of these reports published in the last year.

2.29 The Major Projects Authority assesses the Department's progress on 11 major projects, which form part of the Government Major Projects Portfolio. In May 2014, it awarded amber ratings to 4 of the Department's projects, one amber/green rating and one green rating (**Figure 7**). The Department decided not to support disclosure of the ratings for the remaining 5 projects on grounds that disclosure may harm its ability to secure value for money for the taxpayer. Of the 4 amber rated projects, 2 were amber rated because they were at an early stage. The other 2 projects were amber rated because of their complexity, although the Major Projects Authority did note that good progress had been made since its previous assessment.

Figure 7

Department of Energy & Climate Change Major Projects Portfolio

Project name	Description	Major Projects Authority Red Amber Green rating
Dounreay Parent Body Organisation (PBO) – Delivery Phase	The project aims to reduce the cost and time to take the Dounreay site to its interim end state by securing a new PBO for the Site Licence Company.	Green
Magnox and Research Sites Restoration Ltd Parent Body Organisations Competition	This major procurement exercise is to appoint a parent body organisation which will oversee decommissioning activities at the Magnox and RSRL sites.	Amber/Green
Renewable Heat Incentive	The scheme provides financial support to renewable heat generators and producers of biomethane to help reduce technology costs and incentivise take-up.	Amber
Smart Meters Implementation Programme	The programme aims to install smart electricity and gas meters in all GB homes by 2020 to provide households with real-time information on usage and costs.	Amber
Carbon Capture and Storage Commercialisation Programme	The programme is intended to support demonstration projects in order to gain experience of commercial scale CCS and reduce costs.	Amber
Geological Disposal Facility Programme (GDF)	To deliver a solution for the safe and secure long-term disposal of higher activity radioactive waste for legacy and future nuclear waste.	Amber
Green Deal	The scheme aims to promote a step change in the delivery of energy efficiency measures, supported by private capital.	Data exempt
New Nuclear Programme	The programme aims to put in place a framework to support the development and construction of new nuclear power stations from the earliest possible date.	Data exempt
FID Enabling for Hinkley Point C	This initiative helps developers take early investment decisions on low carbon projects, and specifically supports government negotiations with EDF on support for a new nuclear power station at Hinkley Point C.	Data exempt
FID Enabling for Renewables	This initiative is similar to the FID Enabling for Hinkley Point C, but is focused specifically on renewable energy providers.	Data exempt
Electricity Market Reform Programme	The programme contains a number of policy initiatives to reform the electricity market in order to meet emission reduction targets in the most cost-effective way and to provide secure and affordable electricity.	Data exempt

Note

1 Data is exempt in certain cases to secure value for money for the government. This has been completed under section 43 and/or section 35 of the Freedom of Information Act 2000.

Source: Cabinet Office, *Major Projects Authority Annual Report 2013-14*, May 2014

2.30 The **Committee on Climate Change** produces an annual *Progress Report to Parliament* on meeting carbon budgets. The Committee's July 2014 report concluded that while the UK had successfully met the first budget, meeting future budgets would require further strengthening of policies – including those for residential and commercial energy efficiency, electrification of heat and transport, and power sector decarbonisation. In 2013, greenhouse gas emissions fell by an estimated 2.5%, and they will need to fall by an average of 3% a year to meet the fourth carbon budget. The Committee highlighted uncertainty about low carbon technology beyond 2020 and recommended setting a decarbonisation target for the power sector for 2030.

2.31 The government's response to this report, published in October 2014, recognised the scale of the challenge in meeting the fourth and later carbon budgets, but emphasised achievements to date.[14] Its response to recommendations on the energy sector included highlighting that the 2013 Energy Act allows for a decarbonisation target for the power sector to be set in 2016, once the fifth carbon budget has been set in law.

14 Government response to the Sixth Annual Progress Report of the Committee on Climate Change, October 2014.

Part Three

Recent NAO findings on the Department

Our audit of the Department's accounts

3.1 The NAO's financial audits of government departments and associated bodies are primarily conducted to allow the Comptroller and Auditor General (C&AG) to form an opinion on the trueness and fairness of the public accounts. In this section, we look at the outcome of our most recent financial audit on the Department of Energy & Climate Change and its bodies.

3.2 The C&AG issued a clear audit opinion on the Department's 2013-14 group financial statements and individual accounts. However, as in previous years, the audit opinion for the group financial statements as well as those for the Nuclear Decommissioning Authority and the Coal Authority included an emphasis of matter paragraph. This highlighted the inherent uncertainties involved in valuing future nuclear decommissioning and coal-related liabilities and the extent to which the value of these liabilities could fluctuate significantly if current assumptions change.

3.3 The C&AG also gave an unqualified opinion on the Department's 2013-14 Trust Statement which reported proceeds of £1.1 billion for payment into the Consolidated Fund. These proceeds were from the UK auctions of European Allowances under Phase II and III of the EU Emissions Trading Scheme (EU ETS), from issuing and administering Petroleum Licenses and from sales of carbon allowances arising from the Carbon Reduction Commitment Energy Efficiency scheme. The latter is administered by the Environment Agency, which passes the proceeds it collects to the Department.

Our audits of the Department's effectiveness and value for money

3.4 The NAO's work to test the effectiveness and value for money of government spending in 2013-14 included a number of projects which focused on the Department. The principal findings of these, and in some cases the actions that have been taken since, are summarised overleaf.

Levy Control Framework

3.5 In this report, we assessed the effectiveness of the Levy Control Framework (the Framework) for providing control and accountability to Parliament for levies and levy-funded expenditure against 5 criteria: coverage, governance, forecasts, controls and reporting.[15] We identified shortcomings in the operation of the Framework in some key areas. In particular, we found that:

- there was uncertainty over the coverage of the Framework;
- the board overseeing the Framework did not strongly link spending and outcomes in its deliberations; and
- reporting on Framework schemes had not supported effective public and parliamentary scrutiny of overall costs and outcomes from levy-funded spending.

3.6 The Energy & Climate Change Select Committee held a hearing on this topic in December 2013, and published its own report in February 2014. It recommended improvements to the Department's public and parliamentary reporting on the costs and outcomes from consumer funded schemes. In its July 2014 response to the Committee, the Department recognised the importance of transparent financial reporting and public and Parliamentary accountability and it confirmed that it will publish information on spend and outcomes of consumer-funded policies by the end of 2014.

Update on preparations for Smart metering

3.7 We reviewed the progress that the Department had made in its preparations to roll-out smart electricity and gas meters to all homes and small businesses across Britain by 2020; and the remaining risks and challenges to successful delivery.[16]

3.8 We noted that the economic case for the smart metering programme remained positive, generating expected net benefits of £6.2 billion. We concluded that the Department had made good progress with Ofgem in preparing for the mass roll-out of smart meters, and in establishing much of the necessary regulatory, technical and commercial framework needed to pave the way for passing responsibility to industry. However, significant risks remained including potential consumer resistance to smart meters; the need for industry to resolve outstanding technical issues; the readiness of suppliers, network operators and the supply chain for large-scale installation; and the operational robustness of the data security and privacy arrangements.

15 Comptroller and Auditor General, *The Levy Control Framework*, Session 2013-14, HC 815, National Audit Office, November 2013.

16 Comptroller and Auditor General, *Update on preparations for smart metering*, Session 2014-15, HC 167, National Audit Office, June 2014.

3.9 The Committee of Public Accounts held a hearing on the basis of our report in June 2014 and published its own report in September 2014. It expressed concern about the Department's reliance on competition in the industry to control costs and deliver benefits, and about the risk of the government becoming locked into an existing technology leading to consumers paying for investment in a system which is already out of date. It recommended that the Department should monitor progress, costs and benefits during roll-out to identify whether changes are needed to secure the delivery of smart meters at minimum cost to consumers and ensure vulnerable and low income households benefit.

Early contracts for renewable electricity

3.10 We assessed the value for money of the early contracts for difference awarded to 8 renewable electricity generation projects under the Department's Final Investment Decision enabling for Renewables (FIDeR) scheme.[17] The Department intended this scheme to address a hiatus in investment in renewable electricity generation projects during the transition from the Renewables Obligation to Contracts for Difference.

3.11 We found that the early contracts for renewables had helped industry confidence in the near term and should make a significant contribution to meeting the UK's 2020 renewable energy targets. The contracts themselves are designed to offer better VfM than the Renewables Obligation they replace. However, we were not convinced that it had been essential to award so much consumer support through early contracts, which together accounted for 58% of the Department's total budget for all Contracts for Difference to 2020-21. The administratively set strike prices awarded in these early contracts may provide higher returns than needed to secure investment, and we found that the Department had not included any mechanism to clawback for consumers a share of any excessive returns made by project developers. We concluded that awarding so many early contracts without price competition had limited the Department's opportunity to secure better value for money under the main Contracts for Difference scheme.

3.12 The Committee of Public Accounts held a hearing on the basis of our report and published its report in September 2014. It made various recommendations, including that the Department should award future contracts on the basis of price competition and should include clawback provisions in the event of excessive profits. It also recommended that the Department should assess how effective the scheme has been.

17 Comptroller and Auditor General, *Early contracts for renewable electricity*, Session 2014-15, HC 172, National Audit Office, June 2014.

The Department in a cross-government context

3.13 In addition to our work on individual departments, the NAO increasingly looks at performance across government, in order to understand how different departments measure up on important issues.

3.14 We reported on *Infrastructure investment: the impact on consumer bills* in November 2013.[18] This report addressed energy and water infrastructure, and to a lesser extent, telecoms. Together, investment in these sectors accounts for 67% of the expected £310 billion investment in UK infrastructure over the next decade and beyond. The report found that the majority of the new infrastructure required would continue to be paid for by consumers through their utility bills. However, despite some good initiatives to assess the impact of policies, notably in energy, the government and regulators did not know how much in total the new infrastructure might cost consumers or whether consumers could afford the additional costs.

3.15 The Committee of Public Accounts held a hearing on the basis of our report and published its report in July 2014. It concluded that no one in government was taking responsibility for assessing the overall impact of infrastructure investment on consumer bills and whether consumers will be able to afford to pay. This was a particular concern given that the poorest households were hit hardest by increases in bills. The report recommended that:

- departments should take more account of the complexity and uncertainty arising from policy changes and the impact of this on infrastructure investment;
- the Department of Energy & Climate Change should act quickly to give certainty and unlock much needed energy investment;
- HM Treasury should produce and publish a more comprehensive and transparent assessment of the long-term affordability of consumer bills;
- regulators should improve their understanding of the financial structure of the companies they regulate, and monitor the quality of infrastructure investment; and
- there should be improved joint-working arrangements across regulators to deliver a coordinated approach to assessing the impact on bills and affordability.

18 Comptroller and Auditor General, Cross-government, *Infrastructure investment: the impact on consumer bills*, Session 2013-14, HC 812-I, National Audit Office, November 2013.

NAO work in progress

3.16 Hinkley Point C is due to be the first nuclear power plant built in the United Kingdom since Sizewell B, which was completed in 1995. The UK government has agreed the key commercial terms for a deal with EDF Group, the project promoters, including the price that EDF will receive for the power generated by the plant over 35 years from the date of its commissioning (the 'strike price'). In October 2014, the European Commission granted State Aid approval for the main contract, though the Department has not yet submitted an application for State Aid approval for the contracts dealing with nuclear waste and decommissioning.

3.17 We are examining the Department's commercial approach to securing this deal and the proposed terms of the contract. We aim to report to Parliament on value for money and future risks to value for money which the Department must manage. We will also wish to identify lessons learned to inform decisions on future Contracts for Difference.

Part Four

Electricity Market Reform

4.1 In December 2010, the government launched a consultation on a suite of proposals, collectively known as 'Electricity Market Reform' (EMR). In view of its complexity, this part of the report examines this initiative in greater depth and:

- sets out the purpose and scope of EMR;
- describes each of the 4 constituent policy instruments;
- highlights key changes in governance arrangements; and
- sets out the Department's assessment of the cost and benefits from the reforms.

Purpose and scope

4.2 The government embarked on EMR on the grounds that more radical policies were needed to achieve emissions reductions and address security of supply concerns. The Department's modelling work (the '2050 Pathways analysis') concluded that decarbonising electricity by the 2030s was vital if the UK was to achieve the statutory 2050 target of an 80% reduction in greenhouse gases against a 1990 baseline, as it would enable the decarbonisation of the heating and transport sectors.

4.3 The 4 constituent policy instruments of EMR are:

- Contracts for Difference;
- the Capacity Market;
- the Carbon Price Floor; and
- the Emissions Performance Standard (EPS).

4.4 The Carbon Price Floor and the Emissions Performance Standard came into force in 2013. Implementation of the other 2 policies is ongoing, with the first auction for Contracts for Difference for renewables scheduled for October 2014, and the first capacity auction scheduled for December 2014 (**Figure 8** on page 32 and 33).

Contracts for Difference

4.5 Contracts for Difference (CfD) are long-term contracts which guarantee the price that a generator will receive for the electricity they produce. Payments made to generators will be recovered from electricity suppliers who are expected to pass on the costs to consumers. They are expected to offer better value for money than the existing Renewables Obligation (which they will replace), primarily because guaranteed prices should lower financing costs.

4.6 The budget available for Contracts for Difference will be circumscribed by the caps set under the Levy Control Framework, after taking into account other budgetary commitments under the Framework. Contracts will be awarded through allocation rounds before each of which the Department will set a budget for the amount of support available. For the first allocation round in late 2014, it has established 2 separate budgets: one for established renewable technologies (including wind and solar projects) and one for less established technologies (offshore wind and biomass combined heat and power projects). If demand for contracts outstrips the available budget, the Department will award contracts through price competition using an auction process. The government aims to move to price competition for Contracts for Difference for all technologies as quickly as possible.

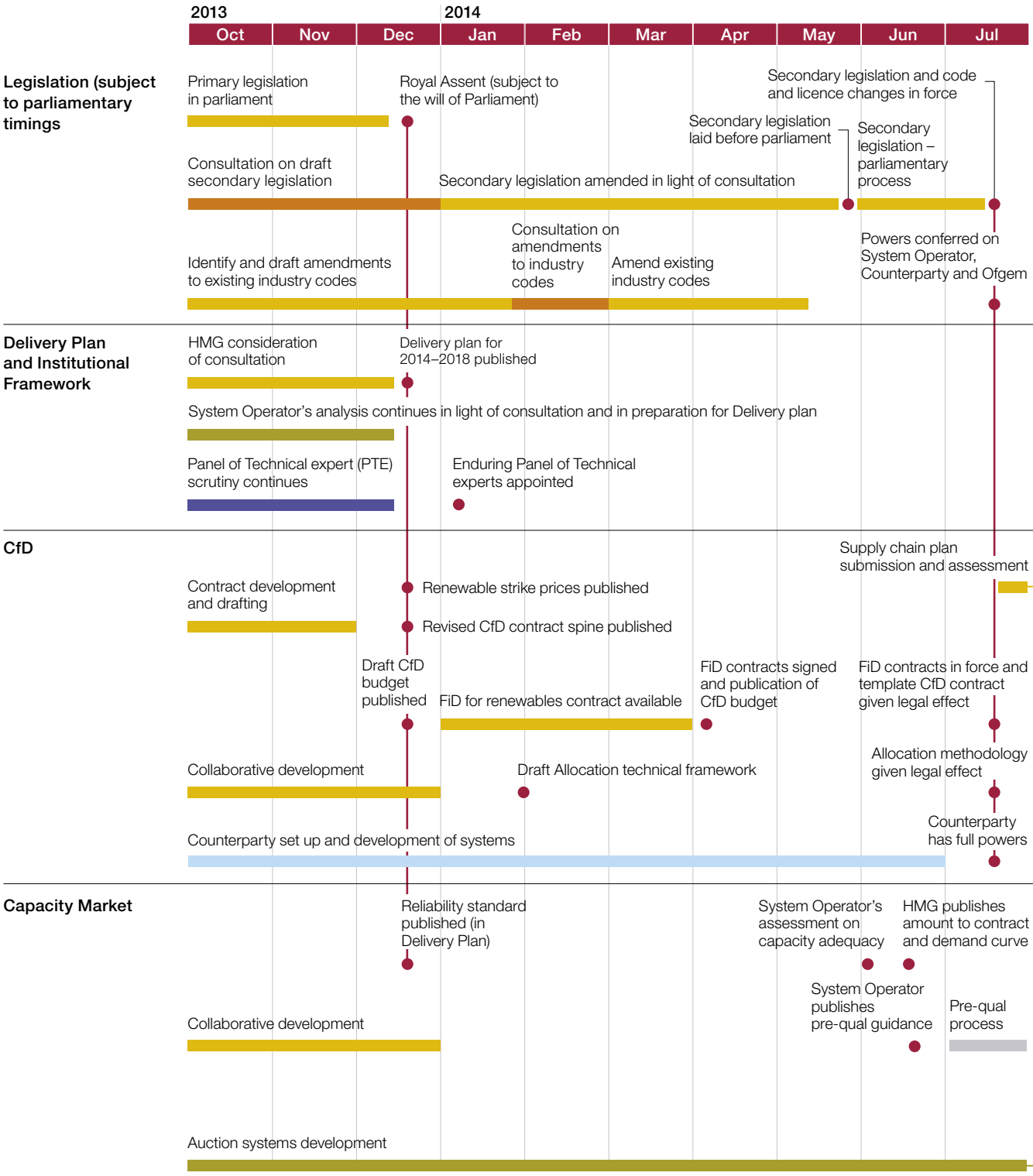
4.7 The Department intends auctions to operate on a 'pay-as-clear' basis whereby applicants will submit sealed bids indicating the lowest strike price they would accept for each unit of electricity they produce. It will then rank bids by cost, and progressively select the cheapest bids up to the limit of each budget. It will award the same strike price to all successful bids using the price offered by the most expensive one. If there is insufficient demand to trigger an auction, strike prices will be awarded according to administratively set rates, published in December 2013. These vary according to the technology employed and the year in which plants are planned to start operating.

Capacity Market

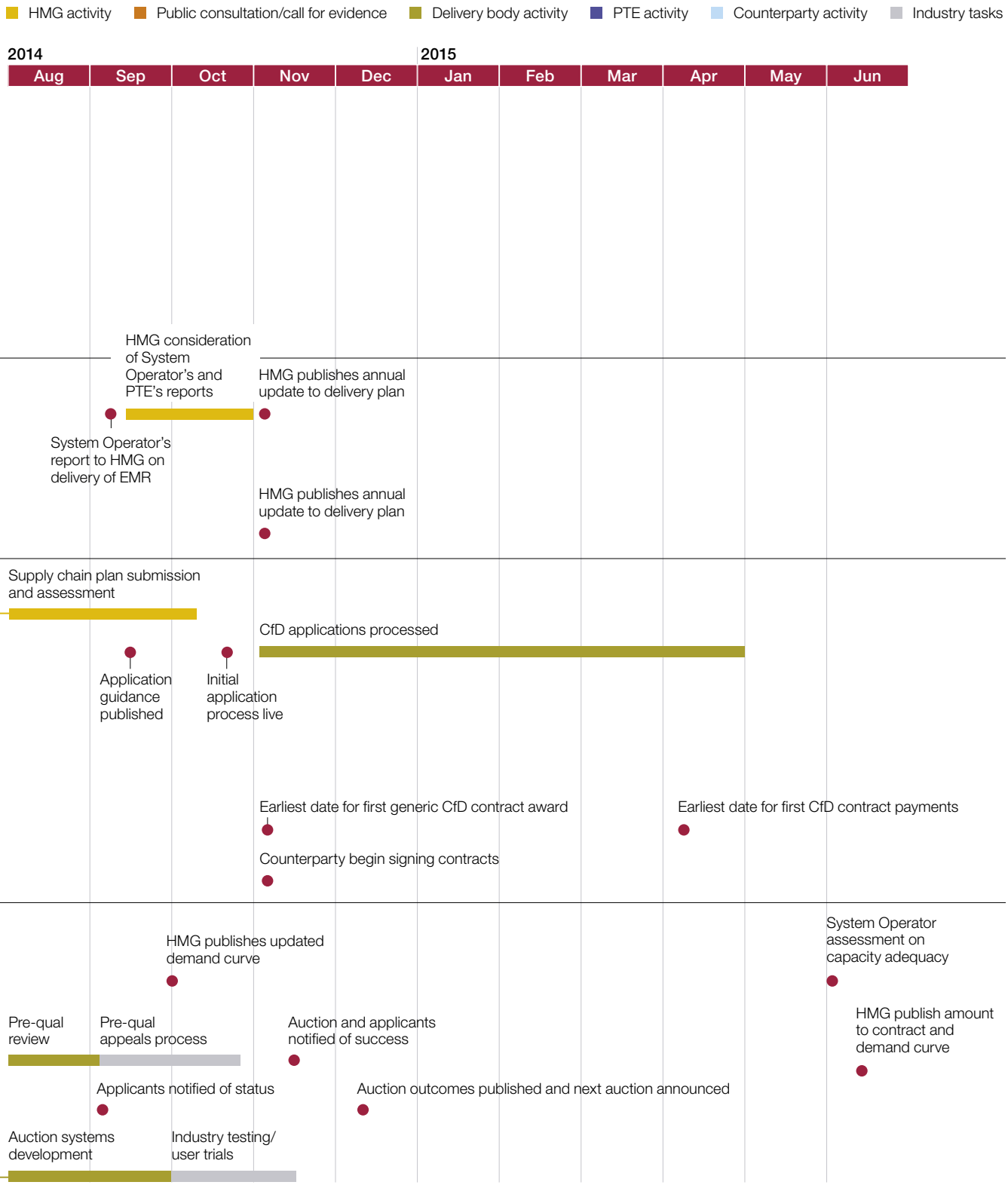
4.8 Through the Capacity Market, the Department will offer support to certain providers of electricity generation capacity to ensure there will be sufficient capacity which can be called upon to meet demand. Capacity providers include new and existing fossil fuel power stations and existing nuclear stations, electricity storage facilities, and major electricity consumers which can voluntarily reduce their demand for electricity when required ('demand side reduction'). Under the Capacity Market, providers will receive contracts known as 'capacity agreements', that guarantee them payments in return for the capacity which they could provide if needed. By guaranteeing a steady revenue stream, the Department expects the Capacity Market to stimulate investment in new electricity infrastructure, as well as keeping existing capacity operational.

Figure 8

Timeline of recent and future EMR developments



Source: Department of Energy & Climate Change, Electricity Market Reform Implementation consultation, October 2013. Available at: www.gov.uk/government/uploads/system/uploads/attachment_data/file/255254/emr_consultation_implementation_proposals.pdf



Note

1 Red circles indicate key delivery targets.

4.9 To determine which capacity providers receive a capacity agreement, the Department will run annual auctions 4 years ahead of the year when the capacity should be provided. It intends to run auctions in a 'descending clock' format. This involves providers confirming they will offer capacity at a particular price, and then further rounds being held at a lower price until the auction discovers the minimum price at which there is sufficient capacity. The government has announced a cap on the price which capacity providers can receive of £75 per kW. Developers of new capacity will be able to secure 15-year capacity agreements so that they have sufficient certainty of revenues to unlock investment in new gas plant. Existing capacity will be able to access rolling one year agreements – although three year agreements will also be on offer to plants which need to undertake significant refurbishment. The first capacity auction will take place in December 2014 for capacity to be available in 2018-19.

4.10 The Department determines in advance of each auction the amount of capacity which it considers it needs to ensure sufficient consistency of supply. It defines consistency of supply in terms of the amount of time demand could be higher than supply in any one year, resulting in a shortage or 'loss of load'. In 2013, it determined that the loss of load expectation for the UK should be no more than 3 hours across all incidents in a year. National Grid, as the system operator and Electricity Market Reform delivery body, provides advice to the Department on the amount of capacity that is needed to keep within that loss of load expectation. The Department estimates the capacity required by using its models of energy demand and energy generation to forecast how demand could be met from baseload, intermittent and flexible sources.

4.11 Capacity payments to generators will begin in 2018. They will be recovered from electricity suppliers who are expected to pass on these costs to consumers. However, capacity payments are expected to result in a fall in wholesale prices, reducing the net cost to consumers. Expenditure on the Capacity Market will not fall within the existing levy control framework spending cap for low carbon electricity. The government plans to set a separate budget for it when there is greater certainty on the size of the costs involved.

The Carbon Price Floor

4.12 The Carbon Price Floor is a tax on fossil fuels used for generation. It is designed to set a minimum price for carbon emissions, topping up the cost of carbon under the EU Emissions Trading Scheme when this is low. By increasing the wholesale price, the Carbon Price Floor will also reduce the scale of support required under the Contracts for Difference scheme.

4.13 The government first announced that it would introduce the Carbon Price Floor at a level of around £16 per tonne of carbon dioxide (tCO_2) from 1 April 2013 and increase it steadily to reach £30/tCO_2 in 2020 and £70/tCO_2 in 2030 (2009 prices). It anticipated that this would drive £30–£40 billion of new investment in low-carbon electricity generation.

4.14 The 2014 Budget announced a freeze in the level of the tax, due to concerns about the impact of energy policies on consumer bills and the lack of investment in new gas capacity. As a result, it will remain capped at its 2015-16 level (£18/tCO_2) until 2019-20.

The Emissions Performance Standard

4.15 The Emissions Performance Standard sets a maximum figure for the carbon intensity of generating plant. Emissions from coal generating plant without carbon capture are typically in the order of 800g/kWh.[19] The Emissions Performance Standard has been set at 450g/kWh, which effectively prevents any new coal plant being built without carbon capture and storage. However, it allows for investment in new gas plant, as emissions from gas plants are generally around 400g/kWh. The Emissions Performance Standard level is determined when plants are built and is guaranteed until 2045. It therefore provides certainty to gas investors that they will be allowed to operate new plants at full output for their entire lifetime.

Governance arrangements

4.16 The development of EMR has necessitated the creation of new bodies and extensive further responsibilities for existing ones (**Figure 9** overleaf). The Department has overall responsibility for setting the policy framework, sponsoring other bodies, and ensuring their accountability. In particular, it will decide on the size of the budgets available for Contracts for Difference, ceiling prices and administratively set strike prices. It will also determine the scale of capacity to contract for under the Capacity Market.

4.17 National Grid also plays a key role in the system. It has been appointed as the delivery body for EMR due to the synergies between this role and its role as System Operator, and it is responsible for:

- providing analysis to inform ministers' decisions on the level of support to provide through the Contracts for Difference and Capacity Market mechanisms; and
- administering the Contracts for Difference and Capacity Market mechanisms, including establishing whether projects meet government-set eligibility criteria, running auctions and administering any additional provisions in contracts.

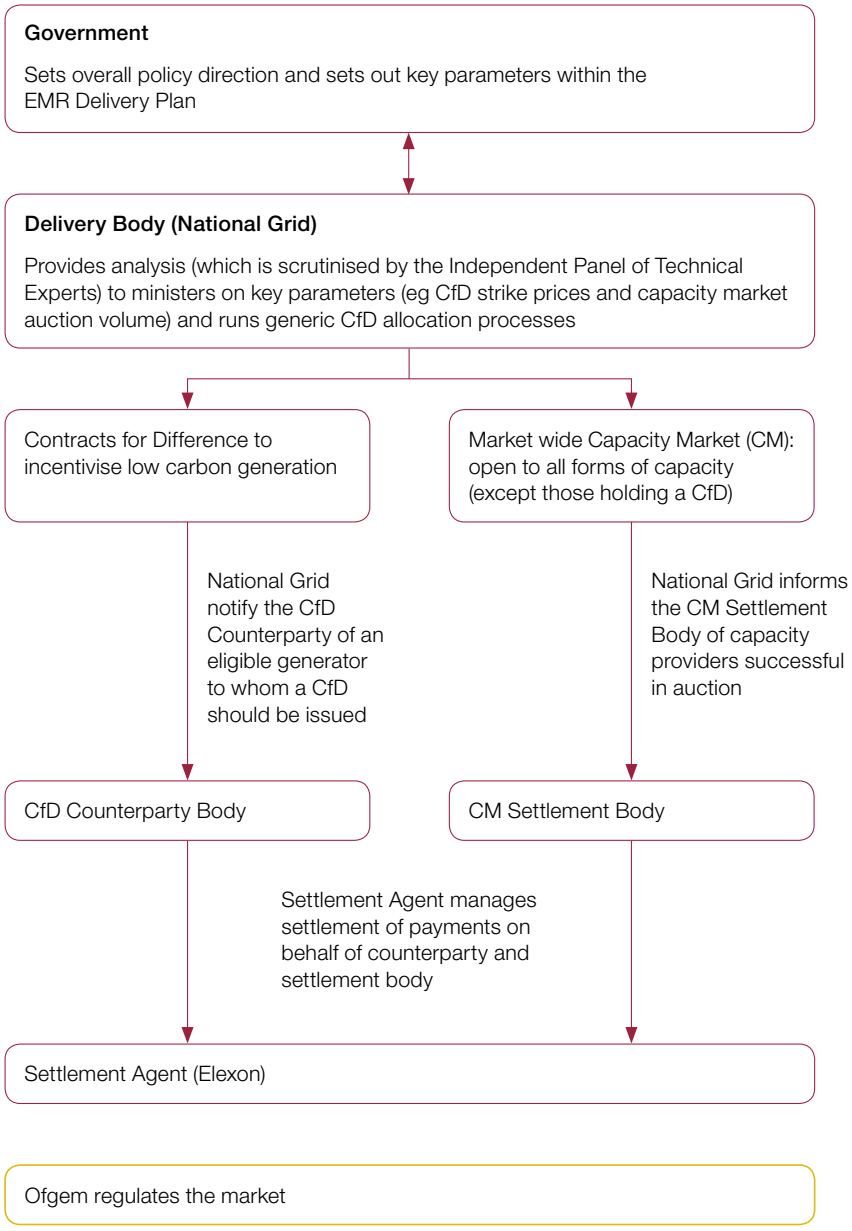
4.18 The EMR framework involves the creation of two new wholly-owned government companies which will be sponsored by the Department:

- The Low Carbon Contracts Company, which will act as the counterparty body for the Contracts for Difference. Its principal function will be to manage payments to and from generators and suppliers under the Contracts for Difference regime.
- The Electricity Settlements Company, which will act as the Capacity Market Settlement Body. Its principle function will be to manage capacity payments to generators.

Both these bodies were incorporated on 1 August 2014, and are recruiting staff and developing financial and administrative systems. The Low Carbon Contracts Company will need to be ready to start making Contracts for Difference payments from April 2015.

19 g/kWh is a measure of the grams of carbon produced by a power station for each kilowatt hour of electricity generated.

Figure 9
Electricity Market Reform governance structure



Source: National Audit Office, based on Department of Energy & Climate Change, *Electricity Market Reform: Consultation on Proposals for Implementation*, Cm 8706, October 2013

4.19 Elexon is a wholly-owned subsidiary of National Grid and is responsible for settlement of the electricity balancing services which National Grid administers. Under EMR, it will also have new operational responsibilities for settlement of Contracts for Difference and Capacity Market payments and recovering these amounts through charges on electricity suppliers.

Anticipated costs and benefits

4.20 The Department has estimated that implementing EMR will result in a net benefit to society of £10.7 billion compared with an alternative scenario in which government used existing policy instruments to achieve a similar generation mix by 2030 (**Figure 10**).[20] The alternative scenario is constructed to achieve the same profile of nuclear and Carbon Capture and Storage (CCS) investment as under EMR, and a similar profile of renewable investment. It does so using a combination of the Renewables Obligation and carbon pricing, with carbon prices assumed to rise significantly to around £175/tCO_2 by 2030.[21]

Figure 10

The Department's assessment of the costs and benefits associated with Electricity Market Reforms

Benefits: £13 billion

The Department assesses that, compared with an alternative scenario in which government uses existing policy instruments to achieve a similar generation mix by 2030, EMR will lead to:

- A reduction of £3.8 billion in financing costs, due to reduced investment risk and the cost of project finance. This is primarily because Contracts for Difference bring greater certainty through guaranteeing the price generators receive for electricity generated.
- A reduction of £6 billion in the capital and operating costs of electricity provision. This is mainly because the EMR option results in less investment in renewable capacity or invests at a different speed, and it therefore does not achieve the same reduction in carbon intensity of generation as the alternative scenario. The absence of a Capacity Market mechanism in the alternative scenario also impacts on capital and operating costs.
- A reduction of £1.7 billion in the costs of unserved energy, primarily because of the introduction of the Capacity Market. Under the alternative scenario, there is no policy mechanism to address security of supply. Unserved energy is the cost to businesses, consumers and households, of unmet demand for energy.
- A reduction of £1.6 billion in interconnector and system costs, primarily due to lower wholesale electricity costs under EMR.

Costs: £2.3 billion

- Carbon costs of £1.7 billion. The Department's modelling suggests that the alternative scenario would lead to earlier decarbonisation as higher carbon prices lead to more gas generation displacing coal. As a result, over the period to 2030, total carbon emissions will be greater under EMR, with associated social and environmental costs.
- Institutional costs of £0.6 billion. These include the costs of National Grid delivering its EMR functions and costs associated with setting up the counterparty bodies. It also includes associated administrative costs to energy sector businesses.

Source: National Audit Office, based on DECC, Final Delivery Plan Impact Assessment, March 2014

20 This net benefit figure is calculated as the sum of costs and benefits between 2012 and 2030, discounted, with 2012 as the base year (2012 prices).

21 The carbon price rises during the 2020s beyond that required to incentivise investment in nuclear in order to incentivise investment in CCS.

4.21 The Department has highlighted the £3.8 billion reduction in financing costs as the key policy benefit associated with EMR. Other benefits identified within the impact assessment result from differences in the generation mix in the Department's model of the alternative scenario. For example, in the Department's model, the high carbon price in the alternative scenario incentivises increasing investment over the 2020s in some renewable technologies beyond the level anticipated in the EMR scenario and beyond that needed to achieve a carbon intensity of the generation mix of 100g/kWh by 2030.[22] This increases the capital costs associated with the alternative scenario. Similarly, the alternative scenario results in a different profile of investment and does not include a policy instrument (such as the Capacity Market) to address security of supply. These factors also play a role in determining capital costs.

4.22 The Department has also assessed EMR against a 'no decarbonisation ambition' option.[23] In this option, there is lower decarbonisation in the electricity sector, implying greater ambition needed in other sectors to meet long-term decarbonisation targets. The costs associated with decarbonisation in other sectors are not considered in the Department's electricity sector modelling. Therefore, the no decarbonisation ambition option will underestimate the costs of meeting long-term carbon targets. The factors that were included in the modelling showed a net £9.2 billion cost to society to 2030 under EMR but a net benefit of £2.7 billion to 2050.

4.23 The Department has commissioned an evaluation covering the first round of EMR delivery and the transitional arrangements to EMR. The objectives include providing feedback on the first year operation of EMR processes, and carrying out an initial evaluation of the extent EMR and early contracts are on track to meet objectives. The evaluation is due to be completed by summer 2015.

Liabilities

4.24 Contracts for Difference will create an associated liability for the Low Carbon Contracts Company. This liability is expected to be consolidated within the 2014-15 Departmental group accounts. In anticipation of this, the Main Estimates for the Department have included a figure of £29 billion for 2014-15 to recognise the liabilities that it expects to arise from Contracts for Difference signed in the year. The liability figure will be based on modelling of the future cash flows to contract holders, based on assumed levels for wholesale electricity prices over the lifetime of the projects and the generation from the supported plants, through to 2035 and beyond. The figure therefore represents an estimate of the total discounted cost to consumers of these contracts. It is expected to increase in subsequent years as more Contracts for Difference are signed.

22 The carbon intensity of the generation mix in the alternative scenario is 92g/kWh by 2030.
23 The Department of Energy & Climate Change, Final EMR Delivery Plan Impact Assessment, March 2014, Appendix E.

Appendix One

The Department's sponsored bodies at 1 April 2014

Executive non-departmental public bodies

Civil Nuclear Police Authority

Coal Authority

Nuclear Decommissioning Authority

Committee on Climate Change

Advisory non-departmental public bodies

Committee on Radioactive Waste Management

Fuel Poverty Advisory Group

Nuclear Liabilities Financing Assurance Board

Public Corporations

National Nuclear Laboratory

Nuclear Liabilities Fund

Low Carbon Contracts Company

Electricity Settlements Company

Appendix Two

Results of the Civil Service People Survey 2013

Survey question (% 'strongly agree' or 'agree')	Department of Energy & Climate Change	Civil service benchmark
Leadership and managing change		
I feel that my department as a whole is managed well	**42**	43
Senior managers in my department are sufficiently visible	**63**	51
I believe the actions of senior managers are consistent with my department's values	**50**	43
I believe that the board has a clear vision for the future of my department	**24**	42
Overall, I have confidence in the decisions made by my department's senior managers	**44**	41
I feel that change is managed well in my department	**28**	29
When changes are made in my department they are usually for the better	**27**	27
My department keeps me informed about matters that affect me	**69**	58
I have the opportunity to contribute my views before decisions are made that affect me	**42**	36
I think it is safe to challenge the way things are done in my department	**48**	38
Organisational objectives and purpose		
I have a clear understanding of my department's purpose	**89**	85
I have a clear understanding of my department's objectives	**86**	80
I understand how my work contributes to my department's objectives	**87**	83

Notes

1 These are summary results of the Civil Service People Survey 2013. Not all question scores have been included.

2 The score for a question is the percentage of respondents who strongly agree or agree to that question.

Source: *Civil Service People Survey 2013*, available at: www.civilservice.gov.uk/about/improving/employee-engagement-in-the-civil-service/people-survey-2013, accessed 28 August 2014

Department for Business, Innovation & Skills (excluding agencies)	Cabinet Office (excluding agencies)	Department for Communities and Local Government (excluding agencies)	Department for Culture, Media & Sport (excluding agencies)	Ministry of Defence (excluding agencies)	Department for Education	Department for Environment, Food & Rural Affairs (excluding agencies)	Foreign & Commonwealth Office (excluding agencies)	Department of Health (excluding agencies)	HM Revenue & Customs (excluding agencies)	HM Treasury	Home Office (excluding agencies)	Department for International Development	Ministry of Justice (excluding agencies)	Department for Transport (excluding agencies)	Department for Work & Pensions (excluding agencies)
45	39	43	28	24	32	35	57	41	26	67	37	64	48	41	40
55	53	53	42	32	41	49	60	57	38	75	47	69	55	57	39
44	43	42	37	29	35	41	57	46	32	63	41	62	49	45	39
48	28	39	23	27	29	28	53	32	28	54	32	55	39	34	40
42	41	39	30	22	30	34	51	43	23	64	35	57	43	37	33
29	28	29	20	14	21	23	40	26	20	47	22	43	32	25	34
24	25	20	16	11	16	16	35	18	17	40	19	34	27	21	30
65	59	60	51	45	53	58	62	56	45	70	57	69	59	60	58
38	34	41	30	23	29	31	44	37	25	48	34	48	37	33	35
40	42	39	32	33	31	38	46	36	33	58	37	44	39	40	42
85	73	75	70	82	83	77	84	77	80	93	84	94	82	80	85
79	63	72	62	74	77	74	81	73	77	88	81	92	77	75	83
84	73	78	74	79	81	79	84	78	80	88	82	91	80	79	84

Appendix Three

Publications by the NAO on the Department since April 2013

Publication date	Report title	HC Number	Parliamentary session
3 July 2013	Department of Energy & Climate Change, Carbon Budget Management: A Briefing for the House of Commons Environmental Select Committee		
15 October 2013	Departmental Overview: The performance of the Nuclear Decommissioning Authority 2012-13		
15 October 2013	Public funding for innovation in low carbon technologies in the UK: A Briefing for the House of Commons Energy and Climate Change Select Committee		
29 October 2013	Assurance of reported savings at Sellafield	HC 778	2013-14
27 November 2013	The Levy Control Framework	HC 815	2013-14
4 December 2013	Departmental Overview: The performance of the Department of Energy & Climate Change 2012-13		
8 May 2014	Electricity Balancing Services: A Briefing for the House of Commons Energy and Climate Change Select Committee		
5 June 2014	Update on preparations for Smart Metering	HC 167	2014-15
16 June 2014	Environmental protection: A Briefing for the House of Commons Environmental Audit Committee		
27 June 2014	Early contracts for renewable electricity	HC 172	2014-15

Where to find out more

The National Audit Office website is
www.nao.org.uk

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