House of Commons

Business and Trade Committee

Decarbonisation of the power sector: Government response to the BEIS Committee's Eleventh Report of Session 2022–23

Eleventh Special Report of Session 2022–23

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Business and Trade Committee

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Contacts

All correspondence should be addressed to the Clerk of the Business and Trade Committee, House of Commons, London SW1A 0AA. The telephone number for general enquiries is 020 7219 8586; the Committee's email address is commonsbtc@parliament.uk.

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Eleventh Special Report

The Business, Enterprise and Industrial Strategy Committee (BEIS) published its Eleventh Report of Session 2022–23, Decarbonisation of the power sector (HC 283), on 28 April 2023. The Department for Energy Security and Net Zero supplied a response on 27 June 2023. Responsibility for scrutiny of Government policy on energy has now passed to the Energy Security and Net Zero Committee; but for general convenience, this Committee, as the successor to the BEIS Committee, is publishing the Government's response as an Appendix to this Report.

Appendix: Government Response

1. The Government welcomes the BEIS Committee's report on Decarbonisation of the Power Sector, published on 28 April 2023. We are grateful to the Committee for delivering such a thorough and timely report. As its authors and contributors will be aware, machinery of government changes have meant this report coincides with the end of power sector decarbonisation being led by BEIS and the transfer of that function to the new Department of Energy Security and Net Zero.

2. The structure of this paper corresponds to the conclusions and recommendations section of the Committee's report. Paragraphs with recommendations are quoted, with the recommendation itself in italics and the government response underneath.

3. Ofgem, National Grid ESO and HM Treasury have provided material on the recommendations relevant to those bodies.

Progress to decarbonise power

Recommendation 1

We reiterate the calls of both the Climate Change Committee and National Audit Office for the Government to publish a comprehensive, long-term delivery plan for a decarbonised power system by 2035. The creation of a new Department for Energy Security and Net Zero should provide the impetus and Ministerial capacity to do this. This plan should recognise the time needed to decarbonise the different aspects of the electricity system as well as the sequencing involved. We recommend that this delivery plan sets out clear roadmaps and milestones as well as contingency plans for key risks and uncertainties. It should also focus on whole system costs. We ask the Government to publish this delivery plan no later than by the end of 2023.

4. The recent Energy Security Plan sets out many of the actions the Government is taking to deliver a secure, low carbon electricity system.

5. The Government recognises the benefit of a more overarching approach to reporting on progress towards decarbonisation of the power sector, and towards how the Government plans to deliver this important commitment. Therefore, the Government plans to report on its delivery, and overall plan to deliver the commitment, on an annual basis.

6. The Department for Energy Security and Net Zero is therefore strengthening its portfolio management approach, as a core element of its delivery of power sector decarbonisation. This includes bringing together relevant measures across the department's delivery work to provide a 'whole system' view and help manage the significant uncertainty towards 2035. The department will use analytical and portfolio management techniques to consider potential options, measure uncertainty and manage the risks, issues, assumptions and interdependencies.

Recommendation 2

The Government should define the 'subject to security of supply' condition in its 2035 target and clarify the amount of residual emissions from unabated gas plants that it is willing to accept from 2035 onwards.

7. The electricity system in 2035 will need to include a mix of technologies and system flexibility to meet our carbon budget commitments and ensure security of supply. This could include electricity generated from unabated gas as we develop and deploy the low carbon alternatives that can replicate its role within the electricity system. The indicative pathway set out in the Net Zero Strategy includes annual average emissions of 9–11 MtCO2 from the power sector across carbon budget 6. The actions set out in the Energy Security Plan, building on the Energy White Paper, Net Zero Strategy and British Energy Security Strategy will deliver a system which is consistent with achieving the power sector's effort share under CB6, whether these emissions are from unabated gas, power CCUS or other technologies.

Retaining investment in low-carbon energy

Recommendation 3

We recommend that when reviewing the competitiveness of fiscal incentives offered by the UK to encourage investment in low carbon energy projects, the Government should consider providing a more tailored response in the capital allowance regime for the sector.

8. [Response provided by HMT] The UK will take a different approach and not engage in a distortive subsidy race. HM Treasury will continue to monitor the impact on the UK, and its response will be on an ongoing basis, as is appropriate, concluding later this year.

9. However, the Government expects that the capital allowances changes announced at Spring Budget—full expensing and the 50% First Year Allowance for special rate expenditure—will support green industries including low carbon energy generation.

10. The Skidmore Review recommended that HMT should review how policy incentivises decarbonisation, including via the tax system and capital allowances. In response to this recommendation, the Government set out that it will engage with industry to carefully consider how best to incentivise businesses to invest in green technology. This will help the Government to consider whether there is a case for doing more through the tax system or whether other levers are more appropriate.

11. Future decisions on tax are for the Chancellor, and any changes would be communicated at a future fiscal event.

Recommendation 4

We recommend that the Government reviews the parameters set for its Contracts for Difference Allocation Round 5 to ensure that they accurately reflect the cost pressures facing the sector.

12. The Government sets Contracts for Difference auction parameters to balance carefully the need to secure new low carbon electricity deployment with the cost to bill payers. The budget for Allocation Round 5 (AR5) was set to reflect the firm pipeline of eligible projects known at that time. Once National Grid ESO has assessed applications and provided the Secretary of State with a valuation of all eligible projects, he will have the opportunity to increase the AR5 budget to reflect more accurately the actual pipeline of eligible projects. The AR5 Administrative Strike Prices (the maximum price a technology can receive per MWh of generation) were published in December 2022 and cannot be changed for this round. ASPs are based on the department's latest view of potential project costs and future revenues, which are consistent with cost assumptions in the upcoming 2023 Electricity Generation Costs report. The ASP Methodology, which sets out how ASPs are calculated, includes consideration of project costs. This methodology is reviewed before every CfD round. Work for Allocation Round 6 has already begun. The Government continues to engage with industry stakeholders to understand better their concerns about cost pressures, which are impacting the sector globally, not just in the UK. It is expected that the broad inflationary protection offered by the scheme's indexation to the Consumer Price Index (CPI) continues to be an attractive aspect of the CfD compared to most other schemes.

Recommendation 5

We recommend that when investing in low-carbon electricity technologies, developers should receive an investment allowance rate equivalent to that received by the oil and gas sector. We further recommend that the Government revisits the case for Voluntary Contracts for Difference for low-carbon electricity generators currently subject to the Electricity Generators Levy.

13. [Response provided by HMT] The Government continues to provide considerable support for investment in renewables. Since March 2021, the Government has committed a total of £30 billion of domestic investment for the green industrial revolution.

14. As the committee notes, investors in low-carbon technology are able to deduct the costs of investment from their Corporation Tax liabilities. At Budget 2023, the Government introduced Full Expensing, which allows companies to write off 100% of the cost of qualifying main rate plant and machinery in the year of investment until March 2026. Companies investing in special rate (including long life) assets will also benefit from a 50% first-year allowance during this period.

15. The Electricity Generator Levy is an exceptional and time-limited measure, which has a fundamentally different design to the Energy Profits Levy applied to the oil and gas sector.

16. The EGL has been designed to leave generators with a share of the upside they receive at times of high wholesale prices which they can use to invest in the clean energy generation we need for the future.

17. Under the Energy Prices Act 2022, the Government took powers to allocate Contracts for Difference (CfDs) to operational low-carbon generators.

18. The Government is undertaking further work to consider whether this could help to limit consumer bills and support investment in low-carbon generation. The option to offer a CfD to operational generators is one of a series of options being assessed as part of the wider Review of Electricity Market Arrangements (REMA) in DESNZ. An update will follow in due course.

19. [Additional Input by DESNZ] Instruments like the Contracts for Difference (CfD) scheme make the UK an attractive place to invest in green industries. Over the last decade, the UK has developed a tremendous record for attracting investment into green industries through a range of financing mechanisms, policy and market frameworks and targeted public investment, and we are determined to build on this.

Routes to managing electricity supply and demand

Recommendation 6

In response to this report, the Government should set out how it is monitoring progress against its ambition to deploy 50 GW of offshore wind by 2030. The Government should also set out how it will be responding to the recommendations of the UK Offshore Wind Champion. Furthermore, local communities which host critical national infrastructure must see tangible benefits from doing so, and connections between offshore wind farms and transmission networks need to be better co-ordinated to minimise disruption for local communities. We ask the Government to set out how it will ensure appropriate oversight of Crown Estate decision-making in respect of social value and impact for local communities.

20. The UK has a world-leading ambition to deploy up to 50GW of offshore wind power by 2030, with up to 5GW coming from floating offshore wind. Although the UK is a world leader in offshore wind, with the most installed capacity in Europe, the Government recognises there are still opportunities for accelerating the deployment of offshore wind in the context of the UK's increased ambitions. The Offshore Wind Industry Council, chaired jointly by industry and the Minister for Energy Security and Net Zero, will bring together key stakeholders to support the continued development of the UK's world-leading offshore wind sector. Work is already underway across government and industry to implement many of the UK Offshore Wind Champion's key recommendations, and we will collaborate with a range of stakeholders to consider all of the recommendations in the report.

21. The Government is consulting on community benefits for network infrastructure, to ensure communities hosting transmission network infrastructure can benefit from supporting the delivery of cheaper, secure and low-carbon energy for all of Great Britain. The consultation, with a close date of 15th June 2023, proposes to introduce voluntary guidance on the appropriate levels and forms of benefits to give communities the knowledge, power and flexibility to decide what benefits they want in consultation with the project developer.

22. The Government will work with The Crown Estate to look at how better co-ordination of transmission links can be incorporated at the early stages of designing future seabed leasing rounds. This will join up with the wider, ongoing work on improving transmission co-ordination and marine spatial prioritisation.

23. Energy Trends is a quarterly statistical release that provides the official statistics for installed offshore wind capacity in the UK, split between fixed and floating offshore wind. The Government uses this to assess our current position compared to our 2030 ambitions.

Recommendation 7

To provide ports with the confidence to make long-term investments in the necessary infrastructure for floating offshore wind, the Government should provide policy certainty that de-risks the required investment in ports.

24. The Government launched the Floating Offshore Wind Manufacturing Investment Scheme (FLOWMIS), worth up to £160 million, on 30 March 2023.

25. FLOWMIS provides grant funding to leverage private sector investment in port infrastructure.

26. The Government is working closely with the Floating Offshore Wind Taskforce on next steps to tackle barriers to deployment, enable collaboration in the industry, and to create the right environment for further investment.

27. The Government is working with other sources of public funding, to maximise the impact of investment.

Recommendation 8

We recommend that the UK Government works with the Scottish and Welsh Governments to agree a UK-wide target for the deployment of onshore wind by 2035, which should inform a specific target to increase the deployment of onshore wind in England.

28. While reaching net zero means that electricity demand is likely to double by 2050 as other sectors are electrified, there is no single optimal technology mix to meet this demand. The Government considers that onshore wind has an important role to play in achieving net zero targets and will promote and incentivise deployment across the UK. Owing to the nature of its impacts, the Government considers the need to allow for flexibility across the UK in a way that allows countries and communities to absorb deployment of onshore wind as supported by them. Setting a UK-wide target would potentially undermine the flexibility needed.

Recommendation 9

If the Government's proposed reforms to the National Planning Policy Framework do not result in a substantial increase in the amount of onshore wind development in England, we recommend that the Government brings onshore wind projects back under the regime for National Significant Infrastructure Projects, as we suggested in our report on the Revised (Draft) National Policy Statement for Energy.

29. The Government believes that decisions on onshore wind sites are best made by local representatives who know their areas best and are democratically accountable to the local community. That is why government removed onshore wind from the Nationally Significant Infrastructure Planning process in 2016.

30. In order to give local authorities in England greater flexibility to respond to views of their communities when considering proposals for onshore wind, the Government announced on 6 December 2022 that we will consult on making changes to the National Planning Policy Framework. The consultation closed in March and the Government will respond in due course.

Recommendation 10

The Government should introduce a framework which supports the retention of existing onshore wind farms and other renewable assets, for example via the Contracts for Difference scheme, when they need to be repowered. The Government should ensure that the planning regime delivers a clear presumption in favour of repowering and life extensions of onshore wind farms.

31. The Government is looking at arrangements to support the repowering of renewable assets when they require updating or replacing.

32. Firstly, as part of the DLUHC consultation on updates to the National Planning Policy Framework, the Government considered how the planning framework best encourages the upgrading of existing onshore wind farm sites. This is vital to sustaining existing sites as failure to do so would mean significant losses of cheap electricity generation. It would also mean having to build new infrastructure elsewhere as a substitute, increasing pressure on the environment and local communities. The Government will respond to the consultation in due course.

33. Secondly, the CfD scheme is designed to support renewable electricity generation assets during the earlier stages of development and generation, with the asset expected to become fully exposed to market conditions towards the tail-end of its life. Contracts under the current CfD framework have been tendered on this basis. The Government is aware of growing stakeholder interest in the viability of CfDs for the repowering of assets and understand that this could play an important role in meeting the Government's net zero and energy security objectives. As such, this was included in the 'Considerations for future Contracts for Difference (CfD) rounds' consultation published on 14 December 2022. The Government's consultation response is due to be published shortly, and will provide more information on the Government's position.

Recommendation 11

The Government should justify the rationale for lowering the ringfenced amount of funding for tidal stream in the latest Contracts for Difference auction, and we invite the future Energy Security and Net Zero Committee to consider that rationale and to challenge it if it thinks necessary. We also ask the Government to consider longer term CfDs for tidal energy, reflecting the longer lifecycle for tidal energy compared to, for example, offshore wind turbines. Industry has requested the setting of a target of tidal stream deployment in order to send further market signals. We ask the Government to consider setting a 1GW target for tidal stream by 2035.

34. In setting the amount of ringfenced funding for tidal stream for AR5, the Government has had to consider various factors, including the dynamics of funding within the overall pot for all the pot technologies. The minima for tidal stream allows tidal stream projects first to access up to £10m out of the total Pot 2 budget of £35m. Tidal stream projects are protected in this way from competition from other technologies in the pot.

35. Furthermore, the minima has been set at a level that still strives to achieve a balance between factors including deployment and cost to consumers. Further information on how the rules guiding how the minimum will operate within the allocation process is set out in the Draft Allocation Framework.

36. The Government continues to assess the merits of setting a long-term target of tidal stream deployment, and recognises the role tidal stream power could play in helping the UK to achieve net zero.

37. With respect to tidal range, the Government recognises the need to provide tailored subsidy mechanisms for intergenerational assets with long construction times like tidal range, one of which may be a longer-term CfD or a regulated asset base model. Of course, any proposed tidal range schemes would need to demonstrate strong evidence of value for money in the context of other low-carbon technologies inclusive of life span and costs of decommissioning, as well as details of its associated energy system benefits and environmental impact mitigation strategies before the Government could take a view on its potential, or on the funding models appropriate for exploration.

Recommendation 12

In response to this report, we request that the Government sets out:

a) *its current estimates of the total cost of delivering the Government's 24 GW ambition;*

b) *its latest official estimate of the total cost of Sizewell C and Hinkley Point C;*

c) *how it plans to finance its 24 GW ambition, including whether future projects will also adopt the Regulated Asset Base model; and*

d) *the impact of the increasing costs of Hinkley Point C and Sizewell C on its plans for nuclear and how it is ensuring sufficient transparency over such costs.*

38. There is a strong strategic case for nuclear, even more so in light of the recent energy crisis, based on the department's strategic analysis of the power sector[1]. The UK is expected to need a four-fold increase in generation to match a forecasted doubling in electricity demand. The department's analysis, which underpinned the Net Zero Strategy, demonstrates that deploying significant nuclear capacity, alongside RES technologies, will increase the number of viable generation mixes that meet the 2050 Net Zero target at low cost.

39. The establishment of GBN will help to deliver an overall nuclear programme, a demonstrated way of reducing overall deployment costs.

1 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1120491/szc-designation-document.pdf

40. Based on the latest EDF Annual Report, the latest cost estimate for the Hinkley point C project is £25–26bn (2015 monies) and £31–32bn in current values.

41. No decisions have been taken yet on the financing model used for future projects. However, should the RAB model be adopted, the project will be required to meet the Designation criteria, as set out in the Nuclear Energy Financing Act 2022, and all relevant approvals.

42. Under the terms of the HPC Contract for Difference, the strike price is £92.50 per megawatt hour. Consumers will only pay when HPC is up and running. Any additional costs incurred are the responsibility of EDF and its partners on the project and will not fall on taxpayers or consumers. The Nuclear Energy (Financing) Act 2022 requires the Secretary of State to take the interests of existing and future consumers (including in terms of cost and security of supply) into account when implementing a RAB model for a designated project. As a shareholder in SZC, government will ensure the interests of consumers and taxpayers will be protected, and there will be multiple mechanisms to ensure that consumers do not bear unacceptable costs. These include continuing our robust due diligence of the project and its costs and schedule before making a final investment decision, and, if the project is approved, implementing any appropriate incentives regime to manage project costs and schedules. We also take confidence that SZC is planned as an above-ground replica of HPC and would be able to take the lessons from its construction.

Recommendation 13

The Government's nuclear roadmap, due later this year, should set out the options for delivering the nuclear capacity the UK will need by 2050, including options for financing these new projects. Great British Nuclear should advise on how such a programme should be phased, including how to decide how much nuclear capacity is needed and the type of nuclear technologies the UK should deploy and when.

43. A roadmap will be published later this year, following the establishment of GBN. In addition, the Government is developing a new National Policy Statement for nuclear energy and, as a first step, intends to consult on a siting strategy later this year.

Recommendation 14

The Government should ensure that critical domestic assets in the nuclear supply chain are supported, while the UK's current ageing fleet retires.

44. Maintaining a strong domestic nuclear fuel sector is critical to support a number of the Government's strategic national security objectives, including UK energy independence. The Government recognises that significant investment will be required to support the sector to develop and produce fuel for new reactor designs, across GW reactors, SMRs and AMRs.

45. Through the Nuclear Fuel Fund, the Government is directly investing to support domestic fuel supply chain in this transition to both protect UK's energy security and support its partners to diversify away from Russian supply. This supports the Government's commitment, made in the G7 Leader's Communique (July 2022) and recently reaffirmed as part of the Sapporo Agreement (April 2023), to reduce global dependence on Russian nuclear fuel.

46. The Nuclear Fuel Fund will provide match funding to promising projects aimed at developing new fuel production capabilities to supply the reactors of today and advanced reactors of the future. Applications for the competitive fund of up to £50m have now closed. Shortlisted projects are undergoing due diligence and assurance ahead of expected grant award in July 2023, subject to final approvals.

47. As part of the Nuclear Fuel Fund, the Government has also directly awarded £13m to Westinghouse, Springfields Fuels Ltd. to support the establishment of a capability to convert both freshly mined and recycled uranium at the Springfields nuclear site. This will help to restore and develop the UK's historic conversion capability, protecting UK's energy security and providing its partners with an alternative to Russian supply.

48. Alongside this, as part of the Atlantic Declaration, the Government has entered a strategic civil nuclear partnership with the US. Through this partnership, the US and UK will take joint action to establish new infrastructure and end-to-end fuel cycle capabilities by 2030 in both continents, substantially minimising reliance on Russian fuel, supplies, and services.

Recommendation 15

We recommend that the Government announces the cluster sequencing Track-1 expansion projects as quickly as possible and provides further detail on the forward timeline for selecting the next CCS clusters that need to be operational this decade. We urge the Government to provide clarity on how the £20 billion for the early development of CCS will be funded. The Government should develop a robust regulatory regime that tests the carbon capture rates of CCS facilities and penalises failure, which in turn should drive innovation.

49. The Government is committed to deploying CCUS to transition to net zero while bolstering economic growth and energy security. Power CCUS is a key part of the government strategy to decarbonise the electricity system by 2035, subject to security of supply.

50. In March 2023, the Government announced £20bn investment in CCUS, and the eight projects selected to progress to negotiations to form the first two CCUS clusters. This £20bn will be funded by a combination of levy funding and exchequer funding and includes the revenue support for power CCUS that will be levied on electricity consumers.

51. However, this is not the extent of the Government's ambitions. The Powering Up Britain publications set out the steps the government is taking to ensure the UK is more energy independent, secure, and resilient. In these publications, the Government announced Track-2 of the CCUS Cluster Sequencing Process and confirmed that the Government will develop the Track-1 clusters to increase the benefits they can deliver. The Government has now conducted an Expression of Interest process on Track-2 and is developing plans to launch a process later this year to enable further expansion of the Track-1 clusters.

52. The Powering Up Britain publications also highlighted the importance of bringing forward power CCUS and other low-carbon technologies that can provide the flexibility to complement renewable generation. To support power CCUS, the Government is developing the Dispatchable Power Agreement (DPA) and the Dual Contract for Difference (Dual CfD) for power Bioenergy with Carbon Capture and Storage (BECCS).

53. DPA contracts will only be awarded, and payments started, to facilities that satisfy all delivery criteria that are needed to operate as a power CCUS project. This includes demonstrating a minimum CO2 capture rate, plant net dependable generation capacity, as well as commissioning the facility in adherence with performance testing standards. The DPA will incentivise a power CCUS facility to provide non-weather dependant low carbon electricity to balance the system and meet demand, and to dispatch this after renewable generation sources but ahead of unabated thermal generation plant. The amount a generator will be paid will in part depend on the capture rate of the plant. This ensures developers are incentivised to maximise decarbonisation and in turn drive innovation.

54. The Dual CfD is still in development but intends to follow CCUS precedents and include contractual mechanisms which ensure that projects deliver a high standard of carbon capture. As a result of these contractual mechanisms, a project would not receive payments if it never demonstrates a high standard of CO2 capture and may face termination if it fails to maintain a high standard of capture rates.

Recommendation 16

The Committee has been concerned to hear reports about alleged misreporting by Drax to Ofgem in order to draw down public funds. We note that Ofgem has started a special audit process. We call on Ofgem to ensure a thorough investigation of the evidence that supported Drax submissions, specifically in respect of the sourcing of wood biomass, and for Ofgem to request access to any internal or independent external audits undertaken at Drax to investigate this issue. We ask Ofgem to report back to the Committee once this investigation has concluded.

55. [Response provided by Ofgem] Ofgem is investigating whether Drax Power Limited is in breach of annual profiling reporting requirements relating to the Renewables Obligations scheme and other related matters. The opening of this investigation does not imply that Ofgem has made any findings about possible non-compliance by Drax Power Limited. The outcome of the investigation will be published in due course and shared with the Committee. Ofgem is unable to comment on the details of ongoing investigations.

Conclusion (Response deemed necessary)

The UK's biomass industry is a diverse sector made up of large-scale power plants through to smaller-scale, more local, generators. The overall costs of large-scale bioenergy power plants, which converted from coal-fired plants, are very expensive and rely heavily on imported feedstocks, which may not be produced sustainably, and which may have significant lifecycle emissions. Existing support schemes for unabated bioenergy are due to end by 2027. We do not believe that the historic allocation of subsidies to large scale biomass, such as Drax, has represented either value for money or the best use of public funds.

56. The use of biomass in energy generation in the UK's power sector has helped to dramatically reduce the use of fossil fuels- particularly coal. Electricity generators only receive subsidies for the electricity they generate from biomass that has demonstrated compliance with our sustainability criteria. Suppliers must demonstrate to the regulators (Ofgem and LCCC) that they meet the criteria, and their evidence is independently audited. Part of the sustainability criteria (the GHG criteria) requires that biomass used to generate

electricity does not exceed a set GHG threshold, and includes a minimum percentage lifecycle GHG emission savings, compared to emissions from a fossil fuel comparator for electricity.

Recommendation 17

We believe that there should be no extension beyond 2027 for taxpayer support for unabated bioenergy plants, and that the aim should be to phase out such plants in favour of more sustainable alternatives as soon as possible. This could include bioenergy with carbon capture and storage but only in a scenario where viable and functioning carbon capture and storage is in use. Further subsidy should not be given to unabated biomass. Any future subsidies should only be provided to companies which can evidence the use of local, waste biomass and not companies that rely on imported biomass.

57. The Government has committed to developing a business model for power BECCS, which could support the conversion of eligible biomass power stations to BECCS plants, subject to value for money and access to carbon transport and storage infrastructure. The Government is working closely with bioenergy generators planning a transition to power BECCS to help facilitate their conversion. The Government is supportive of the role that power BECCS could play in reducing carbon emissions across the economy through generation of negative emissions, as well as providing low carbon power contributing to security of supply, which is a priority for this Government.

58. The Government has no plans to remove support prior to 2027 for biomass generating stations that are already supported under the Renewables Obligation (RO) and the Contracts for Difference (CfD). Such generators undertook their investments in establishing their stations under these schemes and have a statutory right to their existing support, as set out in the schemes' implementing legislation. In the Biomass Strategy Policy Statement, the Government stated its intention for future large-scale biomass-based electricity generation to not be supported without the addition of CCS. Any small or medium-scale new unabated biomass power plants (if awarded a Contract for Difference) must meet updated GHG emission criteria for their supply chains, which could potentially incentivise the use of locally sourced wastes.

Recommendation 18

We do not oppose the use of BECCS for power in principle, but future taxpayer support for BECCS must be contingent on:

a) *robust, transparent evidence that the full lifecycle emissions from BECCS facilities in the UK are carbon neutral within a timeframe compatible with our climate targets; and,*

b) *detailed assessment that BECCS facilities provide value for money.*

59. The Department for Energy Security and Net Zero's Chief Scientific Advisor commissioned a task and finish group to establish an evidence-based position on the validity of BECCS as a Greenhouse Gas Removal (GGR) option to deliver negative emissions. The group's report will be published alongside the Biomass Strategy.

60. The Government is committed to developing a business model for power BECCS, which could support the conversion of eligible biomass power stations to BECCS plants.

The Government recently consulted on a power BECCS business model, where it was stated that government will develop options for setting a maximum GHG threshold for the supply chain emissions, to ensure that BECCS delivers genuine net-negative emissions.

61. Deployment of GGRs, including BECCS, will be contingent on eligibility, availability of relevant transport and storage infrastructure where required, and an assessment of affordability and value for money.

Recommendation 19

The Government should publish its biomass strategy without delay and set out:

a) *the Government's assessment of future demand for biomass feedstocks in the UK and globally;*

b) *the extent to which the UK can rely on domestic biomass feedstocks to meet future demand and mechanisms to support domestic biomass supply; and*

c) *the timeframe for scaling up the supply of domestic biomass feedstocks.*

62. The Government plans to publish the Biomass Strategy before summer recess. The Strategy will set out ranges of potential future sustainable biomass availability to the UK, based on updated modelling.

63. Future feedstock availability will depend on a range of factors, including domestic and global land availability, sustainability policies that stipulate supply chain GHG emissions thresholds, government policies and market developments in the UK and in other countries, as well as the prices different end users are willing to pay for the biomass feedstock.

64. To support the assessment of future biomass availability, the Government has updated the UK and Global Bioenergy Resource Model, which will be published alongside the upcoming Biomass Strategy. This was used to develop illustrative scenarios of potential future biomass availability. Given the complexity of the biomass supply system and significant uncertainty of a number of key factors detailed earlier, they do not represent exact limits of biomass availability, but provide a set of plausible future scenarios. More detail will be published in the forthcoming Biomass Strategy.

Recommendation 20

We urge the Government to ensure that there is a robust contingency plan in place if BECCS proves unviable, either in terms of its sustainability or efficiency. We urge the Government not to rely upon unproven technologies at the expense of other simpler and cheaper approaches, which could be taken now, such as deploying measures to reduce energy demand.

65. Greenhouse Gas Removal (GGR) technologies, including BECCS, will be essential for reaching net zero—balancing residual emissions from hard-to-decarbonise sectors while providing new economic opportunities as part of the UK's Green Industrial Revolution. The Government's priority is to reduce greenhouse gas (GHG) emissions from human activities and to only use GGRs to mitigate remaining GHG emissions that are unavoidable.

66. This recognition of the importance of GGRs to meet net zero both internationally and domestically has been supported by both the Intergovernmental Panel on Climate Change3 (IPCC) and the Climate Change Committee (CCC)[2]. The Climate Change Committee (CCC), in their Sixth Carbon Budget Report, set out that BECCS technologies can play a significant role in supporting net zero targets through the delivery of negative carbon emissions.

67. The Net Zero Strategy set out an ambition to deploy at least 5 MtCO2 of engineered greenhouse gas removals per year by 2030. Modelling to inform the Net Zero Strategy suggests that by 2050, engineered removals at a large scale, between 75 and 81 MtCO2/year, will be needed to help compensate residual emissions.

68. Government policy framework will aim to support a diverse portfolio of GGR technologies to achieve commercialisation. The Government believes this will be essential to reduce reliance on any single technology, allow innovative and highly scalable solutions to demonstrate cost reductions, and spur the growth of a robust competitive market that can support decarbonisation at the lowest cost to business while maximising the benefits to the UK economy.

69. There are around 35 commercial facilities applying CCUS to industrial processes, fuel transformation and power generation globally, with a total annual capture capacity of almost 45 Mt CO2[3]. Although BECCS and DACCS are not operating at scale in the UK, given current barriers to commercial deployment, they are operating elsewhere globally (such as Canada and Norway) in demonstration plants, and carbon capture technology is operational at commercial scale.

Recommendation 21

We recommend that the Government takes forward the recommendations of the Climate Change Committee to develop a cross-sectoral infrastructure strategy that narrows the space for future hydrogen uses and finalise the business models for hydrogen this year.

70. Hydrogen has an important role to play in decarbonising heavy industry and providing greener, flexible energy across power, transport, and potentially heat. However, it is the Government's intention that hydrogen demand is guided by the market. Work is ongoing to ensure the regulatory and policy framework supports off-takers to be ready to switch to hydrogen when the commercial conditions are right. The Hydrogen Strategy 2020s roadmap enables policy to be prioritised towards applications with the greatest strategic potential to support deep decarbonisation of the UK economy.

71. The Government expects to publish the standard terms and conditions of the low carbon hydrogen production business model in Q3 2023 for initial projects, with an aim for the first awards to be made in Q4 2023. The Government committed in the 2022 British Energy Security Strategy to design new transport and storage business models by 2025, and is taking forward the necessary measures to implement this commitment, including through measures in the Energy Security Bill.

2 Climate Change Committee (2020): The Sixth Carbon Budget, The UK's path to Net Zero

3 https://www.iea.org/reports/carbon-capture-utilisation-and-storage-2

Recommendation 22

In response to this report, we ask that the Government sets out how its plans for blue hydrogen will address recent evidence that hydrogen emissions escaping from gas pipelines have a stronger warming effect in the atmosphere than previously thought. It should include in that response an account of how it will ensure that efforts to constrain and monitor methane leakage at point of extraction, transportation and storage are robust.

72. To get the scale and cost reductions we need to meet its carbon budget and net zero commitments, the UK is supporting multiple production routes, including both blue and green hydrogen. In the UK Hydrogen Strategy (2021), the Government set out a roadmap for the hydrogen economy, which shows that the first movers are likely to be green hydrogen projects that can be deployed quickly, with production and end use closely linked, alongside scale-up of blue production, which can be produced at lower cost and with larger capacity. This will allow us to scale up production during the 2020s and be ready to meet the expected increases in demand in the 2030s.

73. The Government has a comprehensive set of guidance and standards in place to ensure any hydrogen production projects supported by government schemes such as the Net Zero Hydrogen Fund and Hydrogen Production Business Model provide significant carbon emission savings while aiming to minimise any environmental impact. Effective use of hydrogen does not lead to its release into the atmosphere, but we recognise the need to minimise leakage in all production processes (electrolytic, CCS-enabled and others), as well as in transport and end use, to ensure we maximise the climate benefit of hydrogen use in the economy. In the UK Hydrogen Strategy, the Government committed to consider the wider environmental impacts of different methods of hydrogen production. The Government expects all planned hydrogen production projects to have robust integrated environmental assessments in place and to comply with the existing and future regulatory regime for environmental issues related to hydrogen production.

74. The Low Carbon Hydrogen Standard ('the standard') sets a maximum threshold for greenhouse gas emissions allowed in the production process for hydrogen to be considered 'low carbon hydrogen'. Compliance with the standard being a requirement of government subsidy schemes, such as the Net Zero Hydrogen Fund and Hydrogen Production Business Model, will help ensure new low carbon hydrogen production can make a direct contribution to our carbon reduction targets. The standard sets a 'point of production' system boundary. For CCS-enabled hydrogen, this means that the standard includes emissions from natural gas extraction, transportation and storage to the hydrogen production facility, and leakage before and at the hydrogen production facility. The standard provides supporting data and methods to ensure these emissions are calculated accurately. Supporting data will be updated as background datasets evolve.

75. The Department for Energy Security and Net Zero will work closely with the relevant regulators to understand any potential wider environmental concerns and the suitability of existing regulation to protect the environment as appropriate. This includes monitoring new research into the Global Warming Potential (GWP) of hydrogen and the resulting need to mitigate against the potential environmental risks, including possible fugitive emissions through leakage from any future hydrogen infrastructure.

76. The Department for Energy Security and Net Zero, in collaboration with other government departments, is continuing the work with UK specialists and the National Physical Laboratory (NPL) to develop more reliable estimates of GB fugitive emissions, identify their impacts and increase capability to find, measure and quantify hydrogen emissions in a more systematic way. Moreover, UK environmental regulators have worked together, with industry and other stakeholders to produce guidance on Emerging techniques for hydrogen production with carbon capture, which includes techniques for reducing fugitive emissions.

Recommendation 23

In response to this report, the Government should confirm whether it still believes that hydrogen storage projects can be delivered by 2030 and, if so, how that will be achieved.

77. In the British Energy Security Strategy, the Government committed to designing a hydrogen storage business model by 2025, to support the growth of the hydrogen economy. 2025 is an ambitious but achievable timeline for designing a complex business model. The model needs to provide both investor certainty and value for money for government, so as to support critical transport and storage projects. In order to progress work to meet this commitment, the Government ran a consultation on the high-level design options for the hydrogen storage business model between August and November 2022. The Government response to this consultation is expected to be published shortly. The Energy Bill has been amended to provide a legislative framework underpinning the delivery of a hydrogen storage business model. It is estimated that a salt cavern purpose built for hydrogen storage will have a build time of 5–10 years, while a converted salt cavern will have a build time of between 3–5 years. Based on these timelines, it is feasible that some hydrogen storage projects could be operational by 2030 if a storage business model is designed by 2025.

78. Ahead of business model support being available, the Government has created several measures to support the development of storage assets through existing government programmes. For example, the Net Zero Hydrogen Fund and Low Carbon Hydrogen Agreement will provide limited funding for costs of associated storage infrastructure for hydrogen production projects. A new approach to strategic planning for hydrogen storage infrastructure is also being developed as a priority. This will help identify and prioritise early strategically significant projects, which will inform the allocation of the storage business model.

79. Hydrogen storage will be essential for the growth of the hydrogen economy. However, any projects that are awarded production contracts to be operational before a date when any storage facilities supported by a storage business model contract would be operational, will, by design, not need storage supported by the storage business model. We therefore do not anticipate that the current storage business model timelines will put the 10GW ambition at risk.

Recommendation 24

We recommend that the Government establishes an appropriate policy framework to support investment decisions in long-duration energy storage this year, to enable projects to be completed by the end of the decade. This includes setting out a target range for long-duration energy technologies and putting in place a revenue stabilisation mechanism. We recommend that the Government ensures that there is a sufficient number of staff within

the Department working on this crucial policy area. In response to this report, we ask that the Government sets out how many staff are working on developing this policy and how this compares to other teams such as those working on civil nuclear energy.

80. Large-scale, long-duration electricity storage (LLES) technologies, such as pumped hydro storage and liquid air energy storage, are key enablers to a secure, cost-effective and low-carbon energy system. The Government will ensure the deployment of sufficient LLES to balance the overall system by developing appropriate policy to enable investment by 2024. As next steps, the Government will evaluate different policies, their benefits, and their interactions with the energy system. The number of staff working on this policy area is commensurate with similar policies in the same state of development.

Recommendation 25

We call on the Government to bring forward the £6 billion funding package for energy efficiency allocated for the period 2025 to 2028 to now. The Government should prioritise delivering a locally co-ordinated programme of energy efficiency and home retrofit. This should be paired with a communications campaign on the benefits of home improvements and fuel switching. We recommend that the Government uses new powers in the Energy Bill to urgently reform the flawed EPC rating system, so that it gives a more accurate reflection of overall energy use and emissions, as soon as the Bill is enacted.

81. Reducing energy demand is a key aim of the Government, which was set out in the Net Zero Growth Plan. The Government's aim is to reduce, by 2030, final energy consumption from buildings and industry by 15%. The Energy Efficiency Taskforce has been established to lead this ambition, with a focus on stimulating private investment and increasing green finance options, as well as galvanising supply chains and increasing public and business engagement with energy efficiency.

82. The Government is already investing £6.6 billion in energy efficiency over this parliament, with further support launching this summer through the £1 billion Great British Insulation Scheme. Further details of the additional £6 billion of funding from 2025–2028 will be announced in due course. This funding will provide long-term investment certainty, supporting the growth of supply chains, and ensuring we can scale up our delivery over time.

83. The Government and Ofgem recognise the need for a local area-level approach to deliver the best network for each local area, by responding to their specific needs. To achieve this, the Government and Ofgem are working together to consider the role that local and regional energy planning could play in delivering net zero, as well as supporting efficient network planning. This includes considering the respective roles of national governments, local government, a Future System Operator, distribution network operation and other key stakeholders for energy planning.

84. The Government has also agreed to pilot a devolved approach to building retrofit from 2025 in the devolution deals with Greater Manchester Combined Authority and West Midlands Combined Authority, to test the benefits that this approach can deliver.

85. The Government agrees that more direct communication is required with consumers to grow awareness of energy efficiency benefits. To support this, the Government has

launched a phoneline service and consumer advice website as part of a three-tiered consumer advice and information offer, which will include local in-person advice in due course.

86. On EPCs, work is ongoing on proposals to improve EPC metrics, and the Government intends to consult on these, taking account of recently published proposals from the Climate Change Committee. Furthermore, the Government has an ongoing programme of user research to improve the way in which information is presented on Energy Performance Certificates.

Delivery risks to the Government's 2035 target

Recommendation 26

The Government should ensure that bodies within the planning system (such as local authorities, the Planning Inspectorate, and the Marine Management Organisation) are adequately resourced to process and comment on applications faster. The Department for Energy Security and Net Zero should work with the Department for Levelling-Up, Housing and Communities, as well as local government and the devolved administrations, to ensure that the planning system embeds and gives priority to the UK's legally binding net zero target and the UK Government's target to decarbonise power by 2035.

87. In February, the Government published its Action Plan for reforming the planning system for Nationally Significant Infrastructure. This recognises the resource, capacity and skills issues that face the system. The Action Plan was published by the Department for Levelling-Up, Housing and Communities and was co-signed by the Secretaries of State for Energy, for Transport and for the Environment. Decarbonisation of the energy system is a priority for the Government, as is the natural environment, food production and transport infrastructure. All of these areas will benefit from the additional resource that will be put into the planning system as a result of measures going the House in the Levelling Up and Regeneration Bill. Government will shortly be publishing a consultation document on implementing the Action Plan.

Recommendation 27

Due to the delay in revising these statements, we urge the Government to make sure the remaining work is delivered at pace. In future, revisions to the NPS should take place in conjunction with changes to the Government's forthcoming delivery plan, so that the two remain aligned.

88. The energy National Policy Statements were consulted on in 2021. They were then revised and strengthened in response to Russia's invasion of Ukraine a year ago. It was right that the Government took this important step, as part of the British Energy Security Strategy, although it has required a further public consultation and an unwelcome delay in having them designated. The new NPSs were published in March for a second round of consultation. The responses will be considered by the Government after the consultation closes at the end of June, and once finalised in response to comments received, will be presented to Parliament in the autumn, to be designated before the end of this year.

Recommendation 28

Local communities who host critical clean energy infrastructure should benefit from doing so. We call on Government to work with the Crown Estate to use the upcoming licencing round for offshore wind in the Celtic Sea as an opportunity for improving the assessment and delivery of social value to local communities, such as in Cornwall.

89. National Grid Electricity Systems Operator (ESO) is developing the Holistic Network Design (HND) Follow Up Exercise. Working closely with the Crown Estate, the ESO will make recommendations for the location of grid connections of in-scope offshore wind projects in areas such as the Celtic Sea. The recommendations will inform connection agreements, including the location of clean energy infrastructure. Any infrastructure proposed will be subject to the appropriate planning process. The Government is consulting on community benefits for network infrastructure, to ensure communities hosting transmission network infrastructure can benefit from supporting the delivery of cheaper, secure and low-carbon energy for all of Great Britain.

90. The consultation proposes to introduce voluntary guidance on the appropriate levels and forms of benefits to give communities the knowledge, power and flexibility to decide what benefits they want in consultation with the project developer.

91. The Government intends to introduce a recommended level of funding for community benefits, which we believe will increase the level of funding from that seen in existing examples of community benefits for electricity transmission network infrastructure.

92. The Government is also discussing with The Crown Estate how best to co-ordinate with their approach to supply chain development, whether that be current Contracts for Difference (CfD) Supply Chain Plan policy, or the potential introduction of CfD non-price factors, which were the subject of a recent Call for Evidence. We are keen to ensure there is as much synergy in the approach as possible. The Welsh Affairs Committee's recent report on Floating Offshore Wind in Wales stated that the large-scale deployment in the region could create 'thousands of high-quality, long-term jobs'.

Recommendation 29

A lack of network capacity and delays to securing grid connections are together hampering the delivery of low-carbon power and driving potential investments overseas. For too long, transmission and distribution network owners have been able to delay or avoid the level of anticipatory investment required to deliver a network capable of meeting the needs of the country. Ofgem's approach to agreeing future investment in previous investment rounds has not been proactive enough, and frequent changes to Government policy have increased investment risk. Together, the system has failed to deliver what is required, and that must change.

93. Both Ofgem and the Government recognise that a transformation of the electricity networks is needed, at significant scale and pace, to support power sector decarbonisation and accommodate the shift to renewable generation at the same time as increasing demand through electrification of transport, heat and other sectors.

94. The Government is committed to accelerating the build of new network infrastructure and speeding up grid connections. Nick Winser, the Network Commissioner will advise

in June on how to accelerate transmission infrastructure and alongside Ofgem, the Government will publish a connections action plan in the summer. The Government supports Ofgem's work to enable anticipatory investment in the network, for example enabling nearly £20bn of investment in the transmission network through their Accelerating Strategic Transmission Investment Framework. Ofgem is also enabling more strategic investment at distribution network level, and has included £3.1bn for lower voltage networks to be upgraded to enable low-carbon technologies to join the grid.

95. Ofgem published a consultation into future systems and network regulation (FSNR) in March 2023, where it set out options to update network regulation in order to support 2050 energy transition goals. The Government supports Ofgem's work in the FSNR to develop a price control framework that has sufficient anticipatory investment to drive the energy transition while protecting consumers from unnecessary costs.

Recommendation 30

We join many other organisations from across the sector in calling on Ministers, Ofgem and network owners to help recover lost ground by accelerating investment in future grid capacity now ahead of need. The increasing costs associated with turning off generation sites due to a lack of transmission capacity must be halted. Investment should be considered to increase capacity where it is currently inadequate and anticipatory investment should prevent this from happening in areas of future development, for example in Cornwall.

96. The Government is committed to accelerating the delivery of new electricity network capacity to accommodate new renewable generation and supporting investment in networks ahead of need, as set out, jointly with Ofgem, in the Electricity Networks Strategic Framework and in the draft Strategy and Policy Statement for energy policy.

97. While grid constraints are a natural part of the electricity system, both Ofgem and the Government recognise the need to keep constraints costs at appropriate levels for current and future consumers. Currently, new network builds are considered when the cost of building new infrastructure is greater than the constraints costs incurred.

98. Through Ofgem's Accelerating Strategic Transmission Investment work, approximately £20bn worth of network projects have been accelerated to support new renewable generation and avoid increasing constraint costs. The Government has also set out in the British Energy Security Strategy how it will use smart and flexible technologies to increase network capacity. For example, storage solutions could help use excess electricity when generation is higher than demand, and release it when generation is lower but demand remains. The Government is working to allow for such solutions through actions set out in the Smart Systems and Flexibility Plan.

Conclusion but response deemed necessary

There has been a clear lack of strategic planning and coordination of energy infrastructure and network upgrades. A failure to plan from a whole system perspective risks increasing the overall costs of the transition. We welcome the more strategic approach emerging following National Grid ESO's Holistic Network Design and Ofgem's Accelerated Strategic Transmission Investment (ASTI) framework. We also welcome measures included in the Energy Bill to enable competition in onshore electricity networks in Great Britain, which should be made a high priority by the Government and Ofgem once enacted.

99. Given the scale of additional deployment required to meet Net Zero targets, the network needs to be designed in a more strategic way to be more forward-looking and to support a more integrated energy system. The Holistic Network Design (HND), published by the ESO, represents a step change in the planning of network infrastructure and will for the first time provide an upfront plan for both wider network reinforcements and the connections for offshore wind. The HND Follow Up Exercise is being undertaken by the ESO. In time, the ESO will build on the approach taken for the HND to deliver Centralised Strategic Network Planning (CSNP), which will take a whole system approach to designing the transmission network. Once established, the Government expects that the Future System Operator will take on responsibility for the CSNP.

Recommendation 31

We recommend that Ofgem sees the Accelerated Strategic Transmission Investment (ASTI) framework as a starting point to accelerate the delivery of the necessary grid upgrades required to meet the Government's 2035 target. This work should continue beyond 2035 to ensure adequate overall capacity for delivering on the 2050 net zero target. We support the recommendation of the Climate Change Committee for the Government to establish a Minister-led infrastructure delivery group, advised by the Electricity Networks Commissioner, to ensure that network infrastructure build is taken forward at pace. This should bring together senior parties across relevant Government Departments, as well as Ofgem, the Scottish and Welsh Governments, National Grid ESO and asset owners, to monitor progress across the initiatives required to expedite progress.

100. The Government welcomed Ofgem's response to their consultation on Accelerating Strategic Transmission Investment (ASTI) in December. This detailed the streamlining of the regulatory approval and funding process, by reducing the number of regulatory assessment stages and allowing the transmission operators earlier access to project funding for accelerating the delivery of ASTI projects, worth nearly £20bn.

101. The Government appointed Nick Winser to the role of Electricity Networks Commissioner to advise the Government on how to reduce timelines significantly for delivering strategic onshore transmission network infrastructure, with an aim of reducing the development times by three years initially, and an aspiration ultimately to halve the end-to-end process, which is 12–14 years. He will submit his recommendations to government in June. As stated in the Energy Security Plan, Government will publish an Action Plan this year in response.

Recommendation 32

We recommend that Ofgem allows National Grid ESO to require projects already in the queue to meet strengthened milestones. If projects are unable to meet these, network operators should be able to prioritise other more viable projects in the queue. In response to this report, we ask that National Grid ESO explains what steps it is taking to work with the Distribution Network Operators to stop projects that want to connect to the distribution network getting stuck in the transmission queue. We would welcome direct intervention from Government on these issues if required.

102. World-leading investment in renewable generation in the UK has meant network operators have experienced record demand for connections to the electricity network and reducing connection timescales is a high priority for Government.

103. For transmission network connections, the ESO is leading work on modifications to the Connection and Use of System Code that would allow enforceable milestones to be inserted into transmission connection agreements[4]. The ESO expects to put proposals to Ofgem for a decision in June 2023. Distribution network operators (DNOs) have been inserting enforceable milestones into connection agreements since 2017. DNOs are now identifying connection agreements prior to 2017 that are still in the connection queue, to insert milestones or remove the projects from the queue[5]. Ofgem has published its support for this action as part of its Open Letter on connections reform[6].

104. More widely, the Government is working with Ofgem and network companies to release network capacity and to improve the connection process in order to reduce connection timescales. This includes improving processes at the transmission and distribution interface, such as how the impact of distribution connections on the transmission network is assessed, to remove, or reduce, dependency on the transmission network for distribution network connections. Details are available on the ESO[7] and Energy Network Association[8] websites. Actions by the ESO alone are expected to see a reduction in transmission connection timescales of 2–10 years, for the majority of existing projects[9]. In addition, the Government has committed to publishing a Connections Action Plan[10], jointly with Ofgem, in the summer, which will set out actions to reduce connection timescales and build on the existing work.

Recommendation 33

The RIIO-ED1 process, which set the amount network operators could charge energy bill-payers for making upgrades to the grid over the period 2015–2023, proved overly generous. Distribution Network Operators were able to either build more infrastructure that is rewarded through the Regulated Asset Value, or not spend on that infrastructure and keep a proportion of underspends. Given that technology deployment curves are hard to forecast, we understand Ofgem's use of uncertainty mechanisms for RIIO-ED2. We will be looking to the regulator to ensure that they better manage risk and that network companies bring forward the required investment. The uncertainty mechanisms will need to be used efficiently, before customers see problems, particularly if the economics of heat pumps or electric vehicles change quickly.

105. In the current electricity distribution network price control RIIO-ED2, Ofgem has proposed baseline funding of £22.2bn, up by more than £1.3bn from its draft determinations, including £3.1bn proposed for network upgrades, supporting the expected uptake in electric vehicles and heat pumps. Ofgem is allowing baseline expenditure, on average across the distribution network companies, 17% higher than in the first price control period RIIO-ED1.

4 https://www.nationalgrideso.com/industry-information/codes/cusc/modifications/cmp376-inclusion-queue-management-process-within-cusc

5 https://cdn.prgloo.com/media/35e96278bc7040f08ed7103df86c23e4.pdf (action 1)

6 https://www.ofgem.gov.uk/sites/default/files/2023–05/Open%20Letter%20Connections%20%28Final%2016.5.23%29.pdf (Annex D)

7 https://www.nationalgrideso.com/industry-information/connections/connections-reform

8 https://www.energynetworks.org/newsroom/energy-networks-launch-action-plan-to-accelerate-grid-connections

9 https://www.ofgem.gov.uk/sites/default/files/2023–05/Open%20Letter%20Connections%20%28Final%2016.5.23%29.pdf (page 9)

10 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1148252/powering-up-britain-energy-security-plan.pdf (page 50)

106. Ofgem has made changes designed to increase the flexibility and speed at which contingent funding can be accessed through uncertainty mechanisms, so that companies can get additional funding above baseline quickly when required. Ofgem is consulting on future systems and network regulation to determine if the RIIO framework is fit for purpose, and to investigate possible archetypes for its reform.

Recommendation 34

We recommend that when a need for investment in the distribution network becomes clear, Ofgem ensures the uncertainty mechanisms included in the RIIO-ED2 framework are applied efficiently. Should these prove inadequate to respond to a rapid roll-out of low-carbon technologies, Ofgem should take equivalent steps to its ASTI framework to ensure that distribution networks are an enabler not blocker to net zero.

107. Ofgem will work to ensure RIIO-ED2 is an agile price control, allowing flexibility in funding to suit network needs as they arise. It has made changes designed to increase the flexibility and speed at which contingent funding through its uncertainty mechanisms can be accessed, so that companies get additional funding above baseline quickly when required.

108. In addition, Ofgem is enabling strategic investment in this price control by allowing for investment ahead of need, taking into account demand forecasts beyond the 2028 date when the price control ends. RIIO-ED2 will also incentivise speeding up the connections process.

Recommendation 35

We recommend that Ofgem revises its approach to the planning of distribution networks to one which is more outcome focused. Ofgem should set the minimum expectations that network users should expect, as well as best practice. Distribution Network Operators should then find innovative ways to meet these standards.

109. As the energy system transitions to net zero, the Government recognises that enabling a more strategic and evidence-based approach to distribution network planning can unlock a wealth of benefits for customers, reduce costs and facilitate a more consistent and better-quality service. This will be essential at a local level to accommodate the expected significant increase in uptake of electric vehicles and heat pumps and growth of local generation of power.

110. This needs to be underpinned by appropriate institutional and governance arrangements at a local as well as national level. Ofgem have recently published a consultation on the future of local energy institutions and governance, including the proposal to create Regional System Planners (RSPs), who would be responsible for undertaking regional energy system planning activities, as well as co-ordinating the input of other actors to the process.

111. The Government welcomes this consultation and will engage with Ofgem over the course of the review to ensure appropriate arrangements are implemented, including legislating if appropriate. It expects Ofgem to publish a decision later this year, and will consider any proposals to improve co-ordination between actors, including distribution network operators, across the energy system at a sub-national level, and to standardise

regional approaches to delivering network infrastructure. These will build on measures to incentivise better performance, for example around speed of connections and flexibility set out in Ofgem's RIIO ED-2 price control, along with Ofgem's Guaranteed Standards of Performance, which place service level requirements to ensure all Distribution Network Operators meet customers' needs.

Recommendation 36

Regulatory settlements for network owners must deliver value for money for consumers. Despite improvements from Ofgem in tackling excessive profits made by these companies in previous price control frameworks, we are concerned that network owners continue to be overly rewarded. Asymmetries throughout the regulatory process between network companies and other stakeholders, including consumer representatives, increase this risk. Greater visibility of network performance is needed to drive up standards and ensure networks deliver against their business plans.

112. Ofgem's mandate is to ensure that network users are provided with a safe, secure and reliable energy network at the lowest possible cost. Within Ofgem's current electricity distribution network price control RIIO-ED2, they have been ambitious in setting stringent efficiency targets. Despite the increase in baseline funding for networks in this price control compared to the last one, the impact on consumer bills is flat, as Ofgem have driven down consumer costs by being stricter on returns. The overall cost of capital allowance is lower than under the last price control (RIIO ED1) to reflect the market conditions.

113. Within the current electricity transmission network price control RIIO-T2, Ofgem have confirmed £30bn in upfront funding alongside lower allowed return on equity of 4.3% and a lower allowed return on debt than RIIO-T1, which should save consumers £2.3 billion over the five-year price control period.

114. Ofgem has also put in place measures in RIIO ED2 (the Return Adjustment Mechanism) to make sure that even if networks outperform the targets they have been set, a greater proportion of this outperformance is shared with consumers. Ofgem have also provided significant funding within RIIO-ED2 for improvements in data & digitalisation and network monitoring equipment that will help support a smarter, more flexible energy system.

Recommendation 37

We recommend that Ofgem consults on how best to address the asymmetries in resources and knowledge between network companies and other stakeholders, such as consumer groups, which influence processes such as price controls. We recommend that Ofgem introduces a more rigorous annual performance process for network owners, and that this information is given appropriate publicity to ensure consumer and parliamentary engagement.

115. [Response provided by Ofgem] Ofgem recognises this is an important issue: the approach to RIIO-ED2 as well as the wider RIIO-2 price controls have sought to ensure consumers and consumer representatives are placed at the heart of the price control processes. To support this, Ofgem undertook a sustained and enhanced engagement process, which began with the publication of an initial open letter in summer 2019. This

included a detailed consultation on the methodology adopted during 2020, a call for evidence on the DNOs' final business plans at the start of 2022, and the Open Hearings with each DNO in March, which each involved large numbers of representative organisations.

116. Ofgem published its Draft Determinations on 29 June 2022 and undertook an eight-week consultation period, which saw around 150 responses submitted. Ofgem required each of the companies to convene an independent Customer Engagement Group to confirm that DNOs have engaged appropriately with consumers and stakeholders in developing their business plans. Separately, consumer representatives are members of the independent RIIO-ED2 Challenge Group. This approach has helped ensure consumers' voices are integral to Ofgem's overall approach and decision making, in line with its statutory duties.

117. The existing RIIO-2 price controls for electricity and gas transmission and gas distribution networks will run until March 2026, with the new price control for electricity distribution running for 5 years until March 2028. Ofgem is considering responses to a consultation on the process for deciding the overarching framework design for the network price controls that will replace these. The outcome will be shared with the Committee in due course.

118. Ofgem sets the price controls through negotiation with the network companies, and engages with a range of stakeholders in doing so, including with consumer groups. Part of the price control process requires that networks engage with Consumer User Groups to feed into their business plans, which they submit to Ofgem. While this helps to ensure a range of views are taken into account when setting the price control, it is true that networks are still a strong voice in this arena. Ofgem does compare different submissions from different networks to ensure fairness in setting the price control. This will be further assisted by data from network competitions, once introduced through the Energy Bill, when data on costs for build and delivery of infrastructure on the open market filters through to Ofgem's consideration. This, as well as the Special Merger regime, which is being introduced through the Energy Bill, will help Ofgem to set a fair price control for consumers and minimise information asymmetries.

Recommendation 38

We recommend that National Grid ESO opens up its markets to more participants and that it is transparent about the choices it makes when selecting which technologies will be used to balance the system. We further recommend that National Grid ESO reports on the carbon footprint of all its markets. In response to this report, we also ask that National Grid ESO sets out its transition plan to ensure that its markets align with the Government's target to decarbonise the power system by 2035.

119. [Response provided by ESO] The Electricity System Operator procures services to balance demand and supply and to ensure the security and quality of electricity supply across Britain's transmission system. The Balancing Mechanism is the ESO's primary tool to balance supply and demand on GB's network and is managed second-by-second.

120. The ESO understands how important it is to integrate low carbon technologies into the Balancing Mechanism and across our wider ancillary service markets. To decide on bids and offers to accept, the ESO reviews the technical parameters of all participants to see what they are physically capable of providing, to ensure the system is stable and safe.

The ESO always considers how competitively priced the bids are, but sometimes must consider other operational and locational factors in making a selection. The ESO's current licence states it cannot take technology or fuel type into consideration in decision making.

121. As the ESO moves towards its 2025 target of operating a net zero electricity system for short periods of time, the ESO will consider how our markets must evolve to facilitate more low-carbon technologies contributing to system balancing and stability. At present, the carbon intensity of the Balancing Mechanism is actively monitored by the ESO, and these figures are published on its data portal.

Recommendation 39

While necessary system reforms take place to create a more enabling environment for demand-side response, we recommend that National Grid ESO and Ofgem work with industry on developing a transitional demand-side response service that can support existing day-to-day balancing services.

122. [Response provided by ESO] Across Winter 22/23, 1.6 million households and businesses signed up to participate in 22 service events across the winter, covering both live events to balance Great Britain's electricity network and monthly test events to deliver savings for consumers, demonstrating interest and enthusiasm for consumer flexibility on a scale not previously seen in the UK.

123. Introduced as an enhanced action to support operation of the network during Winter 22/23, the Demand Flexibility Service was used twice for live events in January 2023 to support the management of the electricity system. While the ESO's day to day operational tools allowed it to operate the network as normal without the active use of the Demand Flexibility Service to manage margins, this service demonstrated the level of interest and engagement in consumer flexibility.

124. The national smart meter network, operated by the Data Communications Company (DCC), also played an important role in facilitating greater consumer participation, helping to connect consumers to a new range of smart applications used by providers for this service.

125. The ESO is undertaking a holistic review of the Demand Flexibility Service alongside industry participants and consumers to assess how the service could be improved in future. The outcomes of this review will be published later this summer, and will inform decision making around the future evolution of the Demand Flexibility Service.

126. [Response provided by Ofgem] ESO is gathering data and evaluating the Demand Flexibility Service, including through the appointment of the Centre for Sustainable Energy and Element Energy, to lead an innovation project exploring the customer experience of participating in the service.

127. Ofgem considers it is important to try to make demand flexibility both universal and automatic, so that consumers do not have to put in as much manual effort to participate and/or benefit from flexing their demand.

128. Ofgem will support the ESO's evaluation activities as it reviews the service for a potential further rollout for winter 2023/24 and stands ready to act when necessary.

Recommendation 40

We recommend that Ofgem puts pressure on the Energy Network Association and Distribution Network Operators to ensure faster and more consistent implementation of the Open Networks Programme.

129. [Response provided by Ofgem] Ofgem recognises the concerns with regards to how distributed flexibility markets operate. While there has been significant progress in the development of distributed flexibility, essential work to align flexibility markets is not progressing at the necessary pace or being implemented consistently. This concern is reflected in recent Ofgem consultations on local energy institutions and governance – proposing a single expert market facilitator – and in the call for input on the future of distributed flexibility markets and the proposal for a common digital energy infrastructure. The Committee's support on this initiative is welcome.

130. Ofgem strongly agrees with the need to focus on near-term progress alongside long-term initiatives. Ofgem is driving DSO capabilities within the RIIO-ED2 price control through a new DSO incentive; ensuring governance arrangements are fit-for-purpose ahead of the next price control and considering the longer-term interventions needed.

131. The new RIIO-ED2 price control arrangements, including a new financial incentive, provide a strong platform for the evolution of DSO, helping to drive changes in how Ofgem organises and operates the networks to unlock the network capacity that customers will need, including harnessing the full potential of flexibility and other smart technologies. This includes driving greater standardisation in the development of flexibility markets.

132. Ofgem has also consulted on the governance arrangements for distribution system operation activities, including the introduction of dedicated regional system planners and a new single market facilitator for flexibility services who will be responsible for delivering more accessible, transparent and coordinated flexibility markets. Ofgem recognises the need to ensure there is no hiatus in progress because of these proposed reforms and is working closely with the ENA, DNOs and wider stakeholders to ensure the current ‚Open Networks work programme is delivered at pace.

133. Ofgem published the Future of Distributed Flexibility Call for Input to facilitate the development of underpinning digital infrastructure needed to make markets transparent, accessible, coordinated and trusted. Ofgem is assessing industry needs and strategically planning now, so that this infrastructure can be in place for when distributed renewable generation, electric vehicles and heat pumps scale up to be dominant parts of the electricity system.

134. Ofgem recognises the existing and ongoing industry initiatives that are important in the short term to deliver benefits. However, this strategic planning is needed to create a cohesive end state, which unlocks the value of distributed flexibility for consumers and the net zero energy system.

Recommendation 41

We recommend that National Grid ESO speeds up progress on making sure its IT upgrades mean that it can handle flexibility from assets smaller than 1MW and reports to Parliament on its progress in hitting this target.

135. [Response provided by ESO] The ESO recognises the size of the investment required in our systems to ensure that electricity system operation meets Great Britain's net zero ambitions. Through its Open Balancing Program, ESO is modernising and transforming its balancing capabilities and associated IT platforms. This will ensure that ESO has the vital flexibility to facilitate future changes, both expected and emerging, across the industry. The ESO's transformation program will look to increase the number of market participants, adapt faster to changing requirements and innovations on the road to 2035, enable a level playing field for flexibility services, and optimise balancing costs for the consumer. The ESO is engaging with industry across this program and providing regular updates to demonstrate its progress against strategic objectives.

Recommendation 42

We recommend firmer intervention from Ofgem on minimum visibility standards for Distribution Network Operators. We also recommend that Ofgem reviews whether it has robust processes in place to monitor whether Distribution Network Operators are taking a 'Flexibility First' approach and making sufficient use of smart solutions.

136. [Response provided by Ofgem] Ofgem agrees with the committee's recommendation to improve the visibility of the electricity network, particularly at low voltages. Ofgem's view is that without effective visibility of the LV electricity network, DNOs will be making false assumptions in their planning, connections, and modelling processes. Some DNOs had started their monitoring rollout during the RIIO-ED1 price control, however, penetration of the overall LV network was poor.

137. At RIIO-ED2 business plan submission, Ofgem encouraged DNOs to submit robust business cases for rolling out network monitoring equipment to address the poor visibility of the LV network. All DNOs submitted acceptable plans for this rollout, and we approved £167.54m of spend on LV monitoring.

138. This LV monitoring capacity will involve a combination of direct monitoring (monitors installed in substations) and the use of aggregated smart data. From combining targeted direct monitoring, advanced data analytics, and smart meter data, DNOs can build a set of substation archetypes that can then be used to model the entire LV network with 100% coverage by 2028. This reduces costs for consumers, as DNOs do not need to roll out expensive monitoring equipment (£1,500–3,000 per unit) to all LV substations. Proposed penetration of direct monitoring varies from 22 to 52% across the DNOs.

139. The design of the new RIIO-ED2 price control, which commenced on 1 April 2023, provides a strong platform to do things differently in terms of how Ofgem organises and operates the networks to help unlock the network capacity that customers will need. This includes harnessing the full potential of flexibility and other smart technologies.

140. Alongside direct funding for the procurement of flexibility services on secondary networks in baseline allowances, in period funding mechanisms include unit rates that will put flexibility services on a level playing field with the alternative of network reinforcement. To enhance DSO capability and get DNOs to develop and use their network more efficiently, including taking a Flexibility First approach, Ofgem introduced a new DSO financial incentive in RIIO-ED2. The incentive offers both reward and penalty, which Ofgem considers as ensuring there is a robust incentive (+ 0.4 % / - 0.2% of RoRE per year) in place, and that the incentive framework hinges on robust LV network monitoring.

141. The DSO incentive uses three evaluation criteria to measure DNO performance: a stakeholder survey, a performance panel assessment, and quantitative metrics. As part of the performance panel, DNOs are assessed on their work in developing flexibility, and as part of that will be explicitly evaluated on how they assess network options. In the survey, stakeholders will be asked to score DNO performance on flexibility market development. Therefore, Ofgem believes that DNOs will be robustly assessed on their performance.

142. Ofgem also included in the ED2 control a new smart optimisation output that will be central to the DSO incentive. Ofgem considers that by introducing this output, building out the digital and data capabilities of the networks, better regulating the DSO functions through clearer outputs and strengthened incentives, DNOs will be able to move from just in time network planning to something that can be more strategically organised at the local level.

Recommendation 43

The current regulatory and market structures of the retail sector will not deliver a consumer experience that can adequately support the transition to decarbonised power system. We recommend that the Government prioritises the reform of the retail market and that its updated Energy Retail Market Strategy:

a) *clearly sets out the role that suppliers will be expected to play in the transition to a decarbonised power system as well as interim milestones to achieve this;*

b) *enables suppliers to innovate and build sophisticated relationships with customers through the provision of a broader set of energy services;*

c) *allows suppliers to be fairly rewarded for providing services that entice customers to shift and reduce demand, in a way that reflects the additional risks that suppliers will be taking on; and*

d) *removes barriers that prevent vulnerable customers from accessing the benefits that the transition will offer.*

143. The energy retail market is the main interface between consumers and the energy system, and government recognises that it is a critical enabler of consumer choice and participation as the energy system decarbonises. As described in the March 2023 Energy Security Plan, the Government is pursuing targeted reforms to deliver an energy retail market that works better for consumers, is more resilient and investable, and supports the wider transformation of our energy system. As part of this, and reflecting the fact that specific features of the current retail regulatory framework may act as barriers to innovation, in summer 2023, the Government will launch a Call for Evidence on how the framework needs to evolve to support new ways of offering energy supply, before a consultation on options later in 2023.

Recommendation 44

We recommend that the Government provides before the end of 2023 a clear pathway on how wholesale market arrangements will evolve following its consultation. There are a number of constructive steps that the Government could make to the existing market structure in the near term, which would help it to provide more effective signals on the type of low-carbon technologies and services the UK needs to decarbonise power. The optimal degree of

locational granularity should weigh the benefits against the level of market disruption, and whether other mechanisms can achieve similar outcomes, within investment timeframes. Comprehensive impact assessments should be published in due course.

144. The Government published its first consultation on the Review of Electricity Market Arrangements in 2022, and published the summary of responses in March 2023. The Government has outlined options for reform it will explore, which includes reforms to wholesale market arrangements (e.g. shortening settlement periods and ways to introduce more locational signals), mechanisms for ensuring security of supply (including a range of modifications to the existing Capacity Market and potential complementary mechanisms), and mechanisms to support deployment of low-carbon and flexible generation at scale.

145. The Government aims to publish a second REMA consultation in Autumn 2023, and will take decisions on shorter-term reforms more quickly where it is viable to do so throughout the REMA programme.

146. Government's aim for the second consultation is to set out a direction of travel, next steps and support a smooth transition to any new arrangements over time. The Government aims to significantly narrow the options - identifying lead options where achievable, shifting the debate to focus on a handful of foundational policy areas and their interactions. The Government will engage extensively with stakeholders throughout this period and will assess policy options against five assessment criteria, which have been updated following stakeholder feedback to the initial consultation. These are Deliverability, Investor Confidence, Whole-System Flexibility and Adaptability, as previously set out, and Value for Money (previously "least cost").

147. The department continues to explore and develop a range of options for sending more efficient locational signals to incentivise generation and demand to locate in more suitable parts of the network and operate more efficiently to lower system costs, and ultimately costs for consumers. These options include but are not limited to locational marginal pricing. The department recognises that some kinds of generation, particularly renewables, can only locate in certain places (e.g. where it is windy or sunny), and it will ensure that the case for investing in these kinds of generation is not unduly affected by any options it takes forward.

The role of institutions

Recommendation 45

We recommend that an explicit duty to deliver on the statutory net zero target is added to Ofgem's remit. We reiterate our previous call for the Government to publish an updated Strategy and Policy Statement for Ofgem which provides a very clear sense of direction to the regulator on how to manage the political and distributional trade-offs intrinsic to its responsibilities, as well as a clear delineation of its roles and responsibilities.

148. The Government published its consultation on the Strategy and Policy Statement (SPS) for Energy Policy in Great Britain on 10 May 2023. The consultation will run for 12 weeks, concluding on Wednesday 2 August 2023.

149. The SPS has been developed in accordance with the Energy Act 2013. It sets out the Government's strategic priorities and other main considerations of its energy policy; the policy outcomes to be achieved as a result of the implementation of that policy; and the roles and responsibilities of those who are involved in implementation of that policy.

150. Ofgem and the Future System Operator, once established, will be required to have regard to the strategic priorities in the SPS when carrying out their functions.

151. Ofgem's principal objective is to protect consumers interests, and this included consumers' interests in the "reduction of greenhouse gases".

152. However, the Government appreciates that an amendment was voted into the Energy Bill by the House of Lords to introduce a statutory net zero duty for Ofgem. The Government has carefully considered the effect of this amendment with Ofgem and sought legal advice, to ensure that the Lords' amendment would not impact the hierarchy and intended effect of Ofgem's duties.

153. The Government is therefore content to amend Ofgem's existing duty to consider a reduction in greenhouse gases by making specific reference to the net zero targets in the Climate Change Act 2008, reaffirming the government's commitment and mandate in achieving our net zero targets and ensuring that Ofgem's role in net zero is clear.

Conclusion but response deemed necessary

The Future System Operator (FSO) is expected to provide strategic oversight of the planning and coordination of the power system, but there is a still a lack of clarity over its specific roles, responsibilities and powers, as well as how it will interact with the Government and Ofgem. It is vital that the FSO is adequately resourced and that there is sufficient accountability and scrutiny of its work.

154. Subject to the passage of the Energy Bill, the FSO will have the powers needed to discharge their functions effectively.

155. The FSO will manage the electricity system in real time, bring together the planning for the electricity and gas networks into a single institution and build up capability to undertake whole system network planning. There are a number of other potential roles that the FSO could take on over time, for example in relation to local and regional energy planning, data, heat, transport, hydrogen and Carbon Capture Usage and Storage (CCUS).

156. The obligations on the FSO will be set out in licences and regulated by Ofgem, and Ofgem will ensure that other licensees have appropriate obligations themselves to manage their relationship with the FSO.

157. Ofgem will also assess the FSO's business plans and performance and allocate funding through a price control process. This ensures that the FSO will be appropriately funded to discharge its functions efficiently.

Recommendation 46

The Future System Operator (FSO) should be granted sufficient powers and resources to effectively plan and co-ordinate the transformation of the electricity system. The FSO should be given a clear net zero directive within its governance arrangements. In response to this

report, we ask that the Government confirms whether it is on track to set up the FSO by or in 2024 and outlines its plans for the division of institutional responsibilities between Ministers, Ofgem and the FSO. The FSO should engage with the Energy Security and Net Zero Committee on the progress it is making to deliver a decarbonised power system by 2035 and proactively share key decisions, performance issues and relevant policy concerns.

158. The FSO will maintain the UK's energy security and operate at the cutting edge of net zero with a long-term ambitious vision. The Energy Bill imposes a duty on the FSO to carry out its functions in a way that it considers best calculated to promote the net zero objective.

159. Progress is reliant on several factors, including timings of the including timings of the Energy Bill and delivery by key parties. The aim is for the FSO to be operational in 2024.

160. As part of the FSO's establishment, the Government will create a framework agreement to outline the primary aspects of FSO's relationships with government. This will include clear articulation of the roles of Ministers, Ofgem and the FSO, and will be made public.

161. The ESO already makes available public information on the Network Options Assessment and publishes a wide range of documentation on future challenges. The select committee will be able to invite the CEO and Chair of the FSO to attend their sessions.