

Business, Energy and Industrial Strategy Committee

Oral evidence: Decarbonisation of the power sector, HC 283

Tuesday 7 March 2023

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[Watch the meeting](#)

Members present: Darren Jones (Chair); Alan Brown; Jane Hunt; Mark Jenkinson; Andy McDonald; Mark Pawsey; and Alexander Stafford.

Questions 340 to 404

Witnesses

[II](#): Kayte O'Neill, Director of Transformation, National Grid Electricity System Operator (ESO); Claire Dykta, Head of Markets, National Grid ESO; Akshay Kaul, Interim Director of Infrastructure and Security of Supply, Ofgem; and Rebecca Barnett, Interim Director of Networks, Ofgem.

Examination of witnesses

Witnesses: Kayte O'Neill, Claire Dykta, Akshay Kaul and Rebecca Barnett.

Q340 Chair: We now shift to panel two. We welcome Kayte O'Neill, director of transformation at the National Grid Electricity System Operator, the organisation that runs our transmission and distribution system in real time, and her colleague Claire Dykta, head of markets at National Grid ESO. In addition, we have Akshay Kaul, who is the director of infrastructure and security of supply at Ofgem, the energy regulator, and Rebecca Barnett, who is the interim director of networks at Ofgem.

I will dive in to question 1 to get us going. The Government have set the target of 2035 to decarbonise the power system. I do not want to predetermine the outcome of the next election, but if there is an incoming Labour Government, they have said that that will be 2030. Those are both bold targets. Are we going to get there?

Rebecca Barnett: I think at the moment we absolutely have things in place to try and get, certainly, to 2035. There are a lot of things going on, some of which you have talked about with the previous panel and some of which we will talk about in more detail.

One of the real challenges we have and something we are really trying to address actively at the moment is more strategic planning in terms of the networks—holistic planning—given the amount of uncertainty across different vectors and what that means for networks. Those are some of the key areas in which we have been trying to make some significant progress on in the last year or two. We will continue to do lots in that area.

One of the key risks we have with the big network expansion that is required would be in planning and consenting and also in the in the supply chain, where we see some constraints. We hear from industry that there are some serious constraints there. So, planning and consenting, bringing communities along with the infrastructure that needs to be rolled out and making sure that there are enough skills and capacity in the supply chain to deliver.

Q341 Chair: Akshay Kaul, to build on that a little from your perspective, looking at security of supply, we have taken evidence on generation infrastructure, skill shortages and various other bits. From a network perspective, in terms of the work they've got to do—they evidently have quite a lot of work to do—are there similar problems for them as well, or do they have everybody they need?

Akshay Kaul: Almost certainly a huge amount of build is needed to get to the net zero targets that you mentioned. That will need a concerted effort from the whole industry, the regulator and the Government. In particular, we need to reform the approach that we take to connecting renewable generation.



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So far, we have operated under the so-called connect and manage policy, under which the grid connects the renewables first and the grid gets upgraded later on. That has been successful over the last decade in connecting people quickly, but it has led to the constraint costs that you mentioned in the previous session. The congestion costs have gone up.

As we look at the next decade and the one after that, we have to shift to a system that does not lag behind, but that anticipates the renewable generation and builds the grid capacity out in advance so that when the renewable generators are ready to connect, the grid capacity is already there. That is absolutely fundamental and will involve an immense amount of investment in grid capacity.

I think we estimate that somewhere between £200 billion to £300 billion will be needed to get to that 2050 target. It will be possible only if we get the right regulations in place—I am happy to talk more about that in due course—if we have the right market arrangements, for which REMA is crucial; if the industry gets its act together on supply chain management; and, importantly and crucially, if we have reforms to the planning and consenting system so that it doesn't take so long for the projects to get through the permitting and consenting process.

Q342 Chair: Thank you. Kayte, from a system operator perspective, are you set up to deal with all of this? There is some commentary that you are a bit analogue; I do not know whether you pick up phones and tell people to turn on power stations or something. What work do you have to do to make sure that you are able to deliver all this in a situation with such decentralisation, a high number of generating sites and increasing complexity of demand?

Kayte O'Neill: This is a journey that we have been on for some time already and continue on from a system operation perspective. Actually, we have targets that would see us able to operate the electricity system carbon-free by 2025. We are making very, very strong progress on that journey.

I do hear the narrative sometimes about whether we are potentially somewhat analogue. We've got huge investment in digitalisation, data and upgrading our own control room systems. I am talking from a sort of a system operability point of view to ensure that we can operate the system. I always describe it as it not being the system that gets in the way. The operation of the system doesn't get in the way of us achieving those 2050, 2030 targets.

Q343 Chair: Claire, we have been talking a bit about balancing costs and them going through the roof. That suggests that the system as a whole is not quite in harmony, because you are having to pay wind turbines quite a lot of money to turn off, because the system cannot handle and store and use the energy in the right way. We are only really at the start of a huge increase in the amount of kit being put on to the system. Why is that such a problem now?

Claire Dykta: As you all know, the GB energy system is one of the fastest decarbonising systems in the world. It has been a huge success story—the speed at which we have got to where we have got to and, as Kayte mentioned, the targets that we have set ourselves within the ESO, but also the Government targets of where we go to.

Having said that, many of the rules, procedures and frameworks that sit around the industry—whether that is the regulatory rules or the market rules—are designed for how the physical system used to look. Most of them exist from even before privatisation, not just since, and they are designed around very few, very big fossil fuel generators.

You are right; we are in a transition at the minute. We are well on the way, but in some senses, we are at the start of it. What is really important is that we keep pushing along with the pace to change and reform the market frameworks and the rules and procedures, so that the system continues to decarbonise, but is secure and operable, and so that that is done in a fair and affordable way for consumers.

Q344 **Chair:** From a consumer perspective, you might not have heard this, but I asked the representative from National Grid Electricity Transmission in the previous panel why these balancing costs have gone up 800% from £300,000 a year to estimates of now £2 billion a year. The answer, unfortunately for you, was that you had to answer that question. Could you give us a little bit more detail on why the cost has so significantly increased?

Claire Dykta: The total cost of balancing the system in the last calendar year was £4.2 billion.

Chair: That is even bigger than the number I had.

Claire Dykta: That is the total cost; that is not just what we would call constraint costs—constraint costs are the lion's share of that number. That is because the rules and the frameworks in the whole industry are designed around a basis of fossil fuel generators being connected on to the system.

Very simply, a large portion of that cost is being able, when there is a lot of renewable output, to transport that from where it is generated to where it is used. It isn't always possible, because we have more generation than we have capacity to transport it. What is really important is that in the short term we have a series of very tactical and mid-term changes that are looking across a whole spectrum of options to keep those costs low. We are constantly evolving the rules and procedures to lower those.

In the long term, as well as the network build that Akshay and Rebecca mentioned, the answer is reform of the market arrangements and the rules so that we are operating in a network of rules that better fit how a decarbonised electricity system looks in the future compared with how it did in the past.

Q345 **Chair:** That £4 billion—customers are paying for that on their bills, aren't



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they?

Claire Dykta: Yes. That is paid by customers. In April this year, we are coming into a slight change in those rules, where those costs are smeared. We have taken some of the volatility out of those costs, so that the volatility is not passed on to consumers through their suppliers.

Q346 **Alan Brown:** Sticking with constraint payments, I read that 85% of the constraint payments go to generators in Scotland, because of the lack of capacity in north-south border transfer. Is that correct?

Akshay Kaul: Yes, that is correct. The vast majority is to Scottish generators.

Q347 **Alan Brown:** According to a report by Regen, there were proposals to increase that cross-border capacity before, but Ofgem didn't sign off on that investment. It could have been delivered by 2023, but now it is not going to be delivered until 2028. Is that correct?

Akshay Kaul: I think there have been proposals, for instance for the Eastern HDVC bootstraps, that have been in the system for a while. The analysis on whether they should or shouldn't go ahead has fluctuated.

To your question, that is the reason, in a sense, that we want to move away from this project-by-project assessment of grid capacity expansion and move to a system plan that looks at the aggregate of what is needed to transport the power from Scotland to England, for instance. That has been very much the subject of the holistic network design.

Q348 **Alan Brown:** How much are the bootstraps you talked about—the east and west bootstraps—going to cost?

Akshay Kaul: It will be billions of pounds. They are expensive.

Q349 **Alan Brown:** How many?

Akshay Kaul: I can send you an exact number in writing.

Q350 **Alan Brown:** Claire, what did you say the constraint payments were?

Claire Dykta: £4.2 billion per year.

Q351 **Alan Brown:** Constraint payments of £4.2 billion in one year; that would go a long way to paying for the bootstraps, would it not?

Akshay Kaul: Yes. I think the way that the system planners assess the extent to which the grid should be expanded is exactly to make that comparison—to say, "What will be the cost of expanding the grid capacity versus the cost of paying renewable generators to switch off?"

Q352 **Alan Brown:** Why has there not been a greater urgency on that, when we have seen the constraint payments go up year on year? They are going up pretty much exponentially at the moment.

Akshay Kaul: You are totally right. It is wasteful and expensive to be paying such a lot of money to renewable generators to switch off.



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Q353 Alan Brown: Whose fault is that? Is it the regulator's fault or is it Government's fault? It must be the regulator, if you are saying it is a waste of money.

Akshay Kaul: My assessment is that the source problem is that the grid capacity is not keeping up with the pace of renewables deployment. Ultimately, the origin of that is a policy introduced by the Government in 2010—the connect and manage policy. That has had the success of very quickly connecting the renewable generators, but the grid capacity has lagged behind. We think we need to change that approach so that in the decade ahead the grid capacity anticipates and runs ahead of renewable generation, rather than lagging behind it.

Q354 Alan Brown: Surely, wind farm developers have not had as much of an incentive to innovate as they should have done. If they are getting paid to turn off their turbines, it does not matter, in a way, whether they are generating or not. A greater incentive to develop storage much more quickly would surely be a better way of managing the system.

Akshay Kaul: You are right. I think Claire mentioned that one of the ideas in the review of electricity market arrangements is precisely how we can improve the incentives for people who use the system to use it in more intelligent ways, and to avoid using it when it is most congested, for instance. That would include the incentives on generators, as well as demand customers, to install storage where they can, and for hydrogen electrolyzers to find a market as well.

Q355 Alan Brown: That is National Grid, yes? We have heard about the length of time it takes to get a connection to the system. I was also reading that you have now started prioritising battery and storage connections. Why has it taken so long to decide to prioritise them? Again, surely that is absolutely critical in balancing the grid and reducing these constraint payments.

Claire Dykta: The previous panel talked a bit about connections. It is not a good situation where developers that are waiting to connect to the grid have connection dates into the mid-2030s, in some cases. That is why we have introduced a tactical programme—the five-point plan that the previous panel talked you through—to get on top of the queue that we have at the minute. Part of that is to change the way we think about batteries on the system so that we can get them connected quicker.

Q356 Alan Brown: If a big battery development is proposed and it is agreed that it is good for the system, how long before it would get connected to the system?

Claire Dykta: It does depend on where it is. The process that we are going through at the minute with that five-point plan will enable us to look again at all the connection offers that are in the queue. We have 257 GW of connection offers in the queue at the minute, on top of 85 GW already connected, against the need for around about 150 GW. Over the next nine to 12 months, the implications of that plan will flow through and we will go to each of those connectees and re-offer them with new dates.



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Q357 Alan Brown: So really we are talking about a year to review, and if you then follow up, speak to them and go through the process, you are surely still quite a few years from clearing that backlog.

Claire Dykta: We have such an excess of capacity in that queue at the minute, and we know from experience that only around 30% to 40% of the projects in the queue actually materialise, so although we have taken a few months to take a step back and reassess how we do things—

Q358 Alan Brown: If it's a holistic approach that is now needed, surely you should be prioritising storage and prioritising where generation capacity is needed the most and where the system is not constrained. There must be a much better way to prioritise what it is in the queue.

Claire Dykta: In a high renewable system it is really important that we have a diverse set of connections and are not reliant on any one technology. I completely agree that storage—both batteries and long-duration storage—is really important, but it is also important to have other technologies in the mix. We need to ensure that the queue is managed in a way such that those projects that are the most serious and most able to proceed are not held up and are able to move ahead at pace.

Q359 Alan Brown: Are you concerned about the reports that the Government have let the talks on the expansion of Rough storage break down? The Government have been in dialogue with Centrica about getting Rough storage back into operation, to a greater capacity, but it has been suggested that the talks have broken down. Does that cause you any concern?

Claire Dykta: If I look at the operational situation that has arisen in the short term as a result of Russia's invasion of Ukraine, there has been an awful lot of preparation across the industry that has helped us to prepare for this winter. In the system operator we have put in place a number of insurance products, or new things—

Alan Brown: My question was about Rough storage.

Claire Dykta: Which would be a question for the gas system operator, but they, too, as part of the industry participants that have been preparing for this winter and next, have looked at a range of options to make sure that we have the tools in place to manage the operational issues.

Q360 Alan Brown: Are you burning any coal this week?

Claire Dykta: The coal units that we put in place as an insurance policy for this winter are being warmed today, so as we speak they are all running, by which I mean they are warming up, but they are not generating at the minute. We will keep a close eye on the situation as it develops over the day and whether we need to actually run them later on this evening.

Q361 Alan Brown: You are warming them up so that they are in a state of readiness; what does that mean going forward? They were supposed to go out of commission—at least one of them this year. Do you think these



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coal plants are going to be needed as back-up next winter?

Claire Dykta: We are working really closely with Ofgem and the Department on the situation for next winter and beyond—whether the systemic risks that we identified this year still exist and then what the appropriate range of tools and capabilities to have in place would be. It is very much a live conversation.

Q362 **Alan Brown:** You cannot say just now whether you think those coal plants will be needed next winter.

Claire Dykta: It would be really important that we have a range of tools and options available.

Q363 **Alan Brown:** You talked about needing a diverse energy mix, and especially renewables. If I was to give you £30 billion to £40 billion to spend over, say, a 10-year period, how would you prioritise that investment in terms of demand-side management versus new generation, and what type of generation?

Claire Dykta: The Government targets that are in place for 2030 and beyond will drive investment in the renewables supply chain through the generators. That is supported by things like the capacity market that provide stability of revenue income for them.

At the system operator, we published a report just before Christmas that looked more widely at resource adequacy in the 2030s, and that said that to be able to operate a renewables-based system, we would need to have not just battery storage but at least one other clean technology that was not weather dependent—so hydrogen, CCUS, nuclear or long-duration storage. Those new technologies all exist but are not necessarily fully commercially viable, so there is a question in terms of Government policy on providing the appropriate support for those technologies to come forward.

Q364 **Alan Brown:** And are you not taking a view?

Claire Dykta: From our perspective as a system operator, the diversity is what is important. We have been really clear that battery storage alone is not sufficient to be able to operate a high renewable system—we need other clean technology as well—but that is a case for Government policy.

Q365 **Alan Brown:** Can nuclear be operated flexibly enough? The suggestion is that it can, but the existing stations do not seem to be able to operate flexibly.

Claire Dykta: My understanding of what the developers of the potential new nuclear projects have said is that they can be operated more flexibly.

Q366 **Alan Brown:** What would “more flexibly” mean?

Claire Dykta: At the minute, nuclear plants run what we call baseloads, meaning they run at a consistent output over time. Flexibility is really important in a renewables system because, as a large portion of your generation is dependent on the weather, quite often you will get over-



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supplied or under-supplied, and the rest of the market should have the ability to flex to meet that, whether that is through supply or demand.

Q367 **Alan Brown:** Hinkley Point C has a 3.2 GW output, but you do not know yet how flexible, or otherwise, that output will be.

Claire Dykta: Every generator, or anyone that is connected on to the system, liaises with us so that we understand their operational parameters.

Q368 **Alan Brown:** You don't seem to know what degree of flexibility a station like that could have.

Claire Dykta: I go back to the point about the diversity of the different mix and the different elements of flexibility. There are lots of different flavours of flexibility that are important as well. It is not just a case of up and down; it is speed of response as well.

Q369 **Chair:** Akshay, just a quick question. Last winter we were all terribly worried that the lights were going to be turned off. Have we done everything we can to make sure we are confident about security of supply for next winter?

Akshay Kaul: We should not be complacent in any way about next winter, or even the one that comes after that. It is true that the risks have receded somewhat. Storage levels are high in Europe as well as in the UK, prices are falling and the forward curve looks quite flat, but we certainly don't want to drop our guard in any way.

On both the supply and the demand sides, there continue to be actions that can be taken to strengthen supplies, as well as to improve the flexibility of the demand side. As Claire was saying, we are working closely with the Department, which is quite rightly in the lead on this topic, and with the system operators to do exactly that.

Q370 **Chair:** How crucial is it that a deal is done on Rough for gas storage?

Akshay Kaul: An increase in storage would be helpful, but there are probably other alternatives as well. In the end, I suspect it will come down to commercial arrangements that I am not personally privy to, but it would certainly help to have a greater degree of domestic resilience.

Q371 **Chair:** Are you comfortable that there is a sufficient back-up plan if the Government cannot do a deal with Centrica on Rough?

Akshay Kaul: The main balancing item of supply for the gas side is the energy market. That is what we looked at very closely for this winter and we have continued to do that for next winter. Domestic storage is quite small in comparison to the flex that we can get through the energy supply, so that is, quite rightly, the main item, but every little bit in the preparation counts and every little bit helps.

Q372 **Andy McDonald:** Rebecca, can I take you back to what you said about looking backwards—forgive me if I haven't got it absolutely right—and that we should take those lessons on board and build in advance for



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future demand?

I was just looking at something from the Centre for Research into Energy Demand Solutions that showed that by 2050 electricity generation could grow by as much 150% or as little as 44%, compared to 2020 levels, depending on the extent of demand reduction and flexibility. To my mind, there is an issue around forecasting. Do we have an accurate enough picture to plan properly? Undoubtedly, flexibility is critical, as outlined. That could save between £10 billion and £17 billion a year by 2050. We do not appear to be there yet with the accuracy of forecasting and in-built flexibility. Is that an accurate assessment?

Rebecca Barnett: I think that is fair. The forecasting is central—one of the things we have to solve going forward. In the net zero world of 2050, we know that that network has to expand dramatically at transmission and distribution levels. We also know that we have to have a whole-system approach to how we plan for the future—between the gas and electricity networks, the role of hydrogen, and so on. We also have to be able to manage the uncertainties at the moment—the key questions that we have still to come up for that.

As Akshay mentioned, we are already making moves. The future system operator that will be up and running next year will be central to this, but there are the moves we have already made through the ESO—the system operator—to try to have more strategic planning with more foresight and more holistic thinking. Admittedly, the HND—a significant step change in how networks are planned—had a relatively specific target, looking specifically at bringing on offshore wind in a more co-ordinated way.

We know that the FSO will take on the function of being a strategic system planner. It will be a guiding mind, combined with some key Government policy and questions. Hopefully, the FSO will take on that role of being able to look out longer term to 2035 and 2050, and come up with a system plan with advice on what is needed, based on a holistic assessment. That is key to rolling out what we need to build and ensuring that we have the right assets being built in the right places at the right time.

Our price controls will, hopefully, fall from that in a way that we have not been able to do before. The previous panel touched on the forecasting of what DNOs might forecast—what we all forecast in price controls at the moment.

Q373 **Andy McDonald:** Thank you for that comprehensive answer. May I move us on? I want to ask about the issue of resilience, network constraints and queue management.

I have a quote here from Guy Newey, the chief executive of Energy Systems Catapult: "I would characterise the current situation as our grid starting to creak...You see that at national level. The system operator has to, as it calls it, redispatch more and more power. It is meant to redispatch around 5% to 10% every half an hour. Sometimes it is having to do 70%...At local level, it is quite an old system. Lots of the



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hardware”—Claire referred to this earlier—“is 60 or 70 years old down there. It is not set up for this smart world that we talk about. It is creaking at both national level and local level.” Is that a fair description?

Akshay Kaul: Let me kick off and then Claire and Kayte can come in. It is unquestionably true that we have to move away from a reactive, market-led expansion of the grid to a system-planned expansion of the grid, which anticipates the renewable generation. There was a lot in your question, so I will just unpack—

Andy McDonald: The kit is just so old—the hardware is 60 or 70 year old.

Akshay Kaul: There is definitely a replacement cycle for a lot of the equipment that is old, but I would not call that the primary issue. The two primary issues that we face are congestion and connections. Those are our overriding priorities at the moment.

On congestion, as the Chair mentioned in the last session, the congestion costs are going up very sharply right now because the grid capacity is not in place to take the power from Scotland down to England, where it is needed. We need to get that grid capacity in as soon as we can. That is the point of the holistic network design, which will be built out by the end of this decade. Then those congestion costs should come back down again.

Alongside that is the fact that the connections queue is lengthening and the time that it takes to connect the people at the back of the queue. In particular, the renewable generators that are part of this holistic network design are getting very, very late offers. We need to find a way to accelerate those. The core issue there, as the previous panel mentioned, is that lots of projects in that queue are stalling everybody else behind them. We have to clear that queue out as quickly as we can.

Claire Dykta: Guy talked about redispatching—where the ESO repositions the market. I mentioned earlier on that many of the rules and frameworks of the industry are set up to deal with how the system looked 20 or 30 years ago. We still need network build-out and smart kit to be able to deal with the big generation that is connecting.

But as we move forward into a renewables world, we are going to see many more smaller supplies located all over the country, and demand flexibility—businesses, public buildings or consumers shifting their demand. At the minute, the signals sent to those users are not sufficiently granular. Someone will use or generate electricity more or less when they want to. What we need to do going forward is be able to provide a really clear signal that it is really useful for you to locate here, say, and for you to use or generate electricity at this point in time. What that does is to stop the system operator from having to unwind what the market has decided to do to ensure that the system remains operable.

Andy McDonald: I will close there, Chair; I am conscious of time.

Q374 **Mark Pawsey:** I will go to Rebecca first. Rebecca, you were talking about the challenge of getting offshore wind connections in place. I understand



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that an offshore transmission network review is about to take place. How will that help?

Rebecca Barnett: Considerably, hopefully. We have been working very closely with the Government, industry and the system operator on that review for a couple of years. One of the things that it has developed is the HND, which has become a blueprint for how to co-ordinate about 20 GW of offshore wind to take you up to that 50 GW target.

One of the really important things that review is doing is better balancing the environmental, societal and economic costs of delivering all this infrastructure. The significant change in targets for offshore wind over the past four years has given a really concrete future that we can all work towards. The amount of infrastructure needed has been a real issue for local communities.

Q375 **Mark Pawsey:** Is there more capacity than infrastructure now, in offshore—to take the power away? This goes back to the issue of people being paid to turn them off.

Rebecca Barnett: The HND—

Mark Pawsey: Sorry—what is an HND?

Rebecca Barnett: The holistic network design. The HND that the system operator delivered shows the onshore upgrades that are really important to deliver—you are absolutely right. As mentioned earlier, once the onshore upgrades are delivered, the constraint costs will come markedly down.

The HND identified the infrastructure needed onshore, and what was brilliant about the plan was that last year it enabled us to identify who was delivering the infrastructure to enable the funding for them to get on with it. The transmission operators now have between them about £20 billion worth of investment that we have given the green light to, through a streamlined regulatory process.

Q376 **Mark Pawsey:** Are there complications in developers sharing infrastructure, particularly in offshore? Currently, each developer is supposed to bring it to shore. That seems barmy, doesn't it?

Rebecca Barnett: In the "business as usual" world, you are right. They all just brought in their radial connection and connected their own offshore wind generation to the onshore grid. The significant step change in target, and also not really bringing local communities with them, has caused real planning difficulties for those projects. Increasingly, we saw some of those projects get slowed down and delayed, and the likelihood of getting planning consent changed.

Q377 **Mark Pawsey:** How can you encourage them to share network infrastructures offshore?

Rebecca Barnett: The HND has identified some co-ordinated offshore infrastructure. We made a key decision last year to enable anticipatory investment—to enable one developer to build a bigger asset or an extra bit



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of asset that a later developer would plug into. There are still some anxieties, particularly from industry, on how some of the extra risk—

Q378 **Mark Pawsey:** Is that because they're competitors and they don't want to talk to one another? What's the problem?

Rebecca Barnett: It is partly collaboration, because they later compete against each other through the CfD auction, so there are sensitivities around how they collaborate at the design and build stage. We are working through that with Government at the moment; I do not think it is insurmountable. They are also worried about some residual risk around anticipatory investment. Again, we are creating the detail of that framework this year, and I do not think those details will be insurmountable.

Q379 **Mark Pawsey:** Would you hazard a guess as to when the issue might be resolved? How long is the process going to take?

Rebecca Barnett: I would hope very soon—by the summer.

Q380 **Mark Pawsey:** Thanks for that. If I could then turn to National Grid ESO, Claire, we are anticipating a cold spell and you are talking about warming up coal. Traditionally, we increase our gas activity, so presumably we are warming up coal because gas is at its maximum level. Is that right?

Claire Dykta: Running into this winter, as I mentioned, we put in place a number of insurance products in case we had some risks that we identified could have arisen. The ability to warm and potentially use coal units is one of those. We also put in place a world-leading demand flexibility service for this winter, which we have also notified that we are going to use tomorrow.

Q381 **Mark Pawsey:** But we would only warm up coal if gas is at 100%. Is that a safe assumption?

Claire Dykta: We warm coal if the information that the market has provided to us shows that it is needed.

Q382 **Mark Pawsey:** Sorry, would you answer my question—yes or no? Is gas running at 100%, and is that why we need coal?

Claire Dykta: We will only warm coal if what the market has provided to us—

Q383 **Mark Pawsey:** Why would you warm coal if there was spare capacity on gas, then?

Claire Dykta: Not all capacity will be available at all times. There could be a gas unit, a battery unit or something else that is on outage.

Q384 **Mark Pawsey:** You raise batteries. I was going to ask why we are not making more effective use of batteries right now.

Claire Dykta: The development of the battery market in the UK is one of the big success stories. Over the last five years, we have had an exponential increase in the amount of storage.

Q385 **Mark Pawsey:** But we still haven't got enough, is what you're about to say.

Claire Dykta: It is a growing—

Mark Pawsey: Sorry, we still haven't got enough. Is that right?

Claire Dykta: It is a growing market, so we will continue to need growth in that market going forwards.

Q386 **Mark Pawsey:** You have been very well coached. It is in its infancy; we haven't got enough yet. Is that true?

Claire Dykta: It is a growing market, so there is a continued need to keep that—

Mark Pawsey: Forgive me; I understand the Chair's frustration with witnesses that we have had in previous sessions. All you have to do is say yes or no.

Claire Dykta: It is not that simple an answer. The system that we have in GB is one of the most resilient systems in the world. We have grown markets in a number of different areas over the last few years, and we will carry on going.

Q387 **Mark Pawsey:** But we can assume that there will be more battery intervention in years to come.

Claire Dykta: You can assume that there is—well, it is not an assumption. There is plenty of investment coming into the battery market and other technologies that will come through—

Q388 **Mark Pawsey:** So in years to come, we might not be heating up coal—considering using coal—because we would have more battery storage.

Claire Dykta: In the future, as Kayte said earlier, we have committed that by 2025, we will be able to run the system for periods at zero carbon, which relies on batteries and other clean technologies.

Q389 **Mark Pawsey:** Okay. Ofgem—Ashkay—could you perhaps tell us about the consultation that you launched last week about the future of local energy institutions and governance?

Akshay Kaul: Yes, of course. Just to answer your previous question, to add to what Claire was saying, I think that in the future, we will almost certainly also need different kinds of storage. Batteries do provide short-term response, but if you have a long period of very cold, cloudy, still weather, we will need something that takes us through that sort of weather phenomenon.

On the local system planning, you are right: we have just published a consultation, which has three main parts to it. The first part is to develop a framework for local system planning of energy in the distribution grids, which is almost an exact analogue of what we are doing at the

transmission level, where the system operator is developing a holistic network plan for the transition system.

We would like to see similar system plans being developed in each of the distribution areas, but it is a little more complex in the local arena, because they need to work with local authorities, which are important spatial planners in each region, and the gas and electricity grid operators. That is the first intervention—the architecture for local system planning.

The second is to facilitate markets, particularly for flexibility. We very much see the need to create something simple and easy for people to use. If we want to reward them by flexing demand, as a household or a business, it should be relatively easy for you to access the market and be rewarded for doing that. We have published some proposals to develop a kind of stock exchange that would allow us to do that.

Q390 Mark Pawsey: That is where people put power from their EV back into the grid, is it?

Akshay Kaul: Correct. EVs or heat pumps—you sell that flexibility back to the system and you get rewarded for it.

The third part of that consultation was on the operation of the system in each local area—the control room that co-ordinates the networks. There have been some calls for us to separate that out, as we have separated the Electricity System Operator and transmission, but we have proposed not to do that. We are proposing to keep it with the distribution grid operators at the local level.

Q391 Andy McDonald: Akshay and Rebecca, you might be able to help me: Ofgem's remit has not changed substantially since its establishment in 2020. It does not prioritise electricity decarbonisation in line with the Government's recent legislation, so would adding a net zero duty to the remit change the way in which you approach network regulation?

Akshay Kaul: I don't think so. We interpret our duty to current and future consumers, and our duty to ensure sustainable development of the energy sector, as entirely consistent with the net zero mandate. If there is one lesson that we can take from the last 12 months, since the Russian invasion of Ukraine, it is that consumers' interests are best served by shifting away from a fossil-fuel economy to one that is dominated by clean energy as soon as possible.

We have very much taken net zero to heart. It is the foundation of virtually every decision we make as a regulator. On the net zero duty, I think we would be absolutely happy to have such a duty—we would not object to it, but welcome it—but I don't think it would fundamentally change—

Andy McDonald: It's not inhibiting what you do.

Akshay Kaul: It is not in any way inhibiting what we need to do.

Q392 Andy McDonald: What impact is the delay to the publication of the



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strategy and policy statement having on your ability to meet Government objectives?

Akshay Kaul: Again, we would welcome the strategic clarity that we can get from the Government through a strategic policy statement. It has been in draft for quite a long while, but we have not let that inhibit the work that we need to do. As you would expect, we work extremely closely with colleagues in the Department for Energy.

There has been strong alignment between policy and regulation in the energy sector, on the network side in particular—last year, we published a joint energy networks strategy with the Department, setting out how we planned to change and reform the system. A couple of years before that, we did a similar thing with smart systems and flexibility. So that has not inhibited what we need to do, but we would very much welcome the clarity that the Government can provide through a strategic statement.

Q393 **Andy McDonald:** May I turn to National Grid? Assume that Ofgem is not listening to your reply: from your perspective, does Ofgem's remit need to change? Does the culture need to change?

Kayte O'Neill: From our perspective, the critical thing is that we have alignment across the energy system, and clarity on roles, responsibilities and what we are all collectively aiming for. My sense is that we have that. I think we have a very strong sense of shared direction.

We opened the session by asking, "Can we get to net zero?", and we would all say that we are all working really hard together to understand what it will take to get there and to make sure we are all able to do our part. We have seen excellent work coming out of Ofgem from a network regulation point of view and out of the Department of Energy, as well as by colleagues across the energy system. I think we are in a good place in terms of alignment and the focus is now on putting the right foundations in place to enable us to take action to get there.

Andy McDonald: All friends! Okay, thank you, Chair.

Q394 **Chair:** Rebecca, let's get into the question around investments. Maybe you heard the previous panel. I think I am right in saying that everyone kind of agrees that the energy networks are behind where they need to be. They need to speed up the delivery of their investment and rolling out their infrastructure to meet the generation and demand needs of the country.

We also recognised that in the last spending period, from 2015 to 2023, they did not hit the targets you set them for future investment. They basically said that, other than some issues around planning and consenting, it was your fault. Why did they say that?

Rebecca Barnett: I am not entirely sure, but I think it was a forecasting fault that was identified. One of the key things that was adjusted for the RIIO-2 settlement was to create a lot more uncertainty mechanisms through the price control review. Through the RIIO-2 for transmission and



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gas and now electricity distribution, which will start in April, we recognise that the baseline forecast is highly uncertain.

We have done the best we can to benchmark, using one of the system operator future energy scenarios, across the DNOs, but we are allowing a lot of uncertainty mechanisms through the period, so that if uptake is different and if that forecast is wrong in various areas, we can—that is why Basil referred to it as adaptive because, through the period, it can operate to follow where the demand is, which at the end of the RIIO-2 price control will ensure that consumers have really got what they paid for.

Q395 Chair: You will have heard this before, but my trouble is that, as I understand it, in underspending on their future investment obligations, the companies have a surplus of funds that they either use to pay for other things or to give as dividends to their shareholders. Customers are paying about £300 a year to ensure that the system is fit for the future; it is not and their money, essentially, is going to profit margins. The energy companies say that Ofgem lets them do that. Why do you let them do that?

Rebecca Barnett: The price control settlement for RIIO-1 was an ex ante settlement and, as Basil mentioned earlier, it has a total expenditure envelope, called Totex. The incentives were set over the whole package, as well as being across various categories of spend. I don't know if Akshay, my colleague, wants to come in, because he—

Akshay Kaul: I was director for networks before—

Chair: Aha! So it was your fault.

Akshay Kaul: Chair, there are two reasons why network companies may not spend the allowances that we give them. As Rebecca said, they are total expenditure allowances. One is that they are genuinely efficient, so they do the work for less money, which is good for consumers because they share the efficiency gain. The other is that they just don't do the work because the need for the work doesn't materialise.

Q396 Chair: Who decides that? Sorry, just to check—"the need for the work doesn't materialise." We can see that there is a lot of need for work that they have not done.

Akshay Kaul: I will give you an example. Rail electrification was one of the topics in RIIO-1, in the period 2013 to 2021. We gave a lot of money to one of the networks to upgrade their network in anticipation that the rail network would be electrified, and then the Government changed the policy and decided that they weren't going to go ahead with that rail electrification policy, which means the need for the work fell away.

One of the lessons we learned from the review of the last price control was that we need to put in place some mechanisms so that when the need for the work falls away, the money is automatically returned to the consumer, rather than the regulator having to go in and probe every single bit, which



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as you can imagine is difficult as these are very large, complicated businesses. That is what we have done with the next price review.

As Rebecca mentioned, RIIO-2 has much more specific funding allocated to specific deliverables. If the work is not done or not needed, the money is automatically returned to consumers.

Q397 **Chair:** Okay, so there is some progress on that.

Akshay Kaul: There is.

Q398 **Chair:** That is good. There was some criticism, from an Ofgem perspective, that you had taken a view about whether the rates of return for the companies were too low to attract investment, but that you merely noted concerns that they were too high and therefore not in consumers' interests. Why didn't you take a stronger view about whether the rates of return were too high, and therefore not in the interests of consumers, who are paying their bills?

Akshay Kaul: That is a really important question in network regulation. It tends to be one of the most contested issues in network regulation, because we have to balance trying to keep bills as low as possible, which means keeping rates of return as low as possible, with the need to attract investment, which means making sure they are attractive and that investors can make a reasonable return.

From a consumer interest perspective, there is an asymmetry in the risk. If the number is wrong because it is too low, there will be under-investment in the sector, and the consequences of that will be blackouts and a lack of reliability—highly costly consequences for consumers. If we set it a bit too high, the bill is higher by maybe a couple of pounds a year, but there isn't a security of supply consequence. We always have to be very mindful of that asymmetry in the risk that consumers face.

Having said that, we have tried very much to make the determination of rates of return as evidence-based and market-based as possible. We were very, very open about the fact that we thought that the RIIO-1 controls—the 2013 to 2021 price review—had been set too high. The market evidence was clearly indicating that those numbers were too high, and we dialled them down from about 7% to 8% in RIIO-1 to somewhere between 4.75% and 5.25% in RIIO-2.

The entire industry was unified in its opposition to our move to reduce the returns in that way. It challenged us at the CMA, and I am glad to say that our decisions were held up by the CMA as being appropriate and not wrong.

Q399 **Chair:** Thank you. Kayte, in terms of customers' money, you have been getting quite a chunk of money to update your systems so that they are more digital and fit for the future. I am sorry to ask this when you are on the same panel, but I understand that when Ofgem reviewed the delivery of that project, you got a pretty poor rating. I think over 90% of the elements of that transformation project were given a red or amber flag.



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Why is that, and what are you doing to ensure the public's money is being spent more effectively?

Kayte O'Neill: It is first worth while saying that there is an extraordinary level of investment required in our systems to ensure, as I said at the outset, that being able to operate the system isn't the thing that gets in the way of us collectively being able to achieve our net zero ambitions. That means that we are investing heavily in both our control room systems and our market systems.

This year, we brought in a consultant through our price control process to help us review, and you are absolutely correct that that process identified a number of reds and ambers. If I take a step back and think about the reason for the reds and ambers, for the most part it is where we are in the development process for some of those IT systems.

To get your eye on the timeline for a price control process, we set out our plans probably two years ahead of the price control window starting for investment that will run over a two, three, four or five-year period, so it is pretty early on when you are doing the very early designs and submitting plans to Ofgem for what it might take to invest.

It is worth saying that, by the time we got to the end of the RIIO process, we pretty much agreed with the regulator that they understood the nature of the investment proposals we were making, that they better understood some of the technology decisions we were making, and that they understood the level of uncertainty in the plan. In spite of that, they were able to agree that we should go forward and make a start on the investment.

Between us we have designed some very good, high quality processes for continually checking in so that the regulator continues to understand what we are investing in—that we have third party support to check and test some of the decisions we are making around what we are investing in, how we are building it and then our performance in the investment as we go along.

So it is about, have we said we are going to do the right things and have we gone for the efficient and overall effective way of delivering them? And then, when the rubber hits the road, are we actually delivering to time, cost and plan? Having jointly developed a process for that, we are now in a position where we are confident about going forward in the investment with our systems.

Chair: Lastly, and ideally in no more than four minutes, I call Alan.

Q400 **Alan Brown:** Thank you, Chair. Can I check that you said that in 2035 you will be able to operate the grid that is zero carbon for periods of time?

Claire Dykta: It is 2025.

Q401 **Alan Brown:** It is 2025, okay.



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In terms of the energy market, the national grid ESO is very big in nodal pricing, yet we keep hearing that nodal pricing is going to deter investment in renewables because companies will not be able to make a return if there is too big a cluster of renewable energy generation. Why are you so fixated on nodal pricing? What is your view on whether it deters investment or not?

Claire Dykta: As I mentioned earlier, what is really important as we move into a high-renewables system that needs lots of flexibility is that we are able to send sufficiently granular signals to everyone participating in that market—where it is ideal for them to site and when and how they generate. Some form of locational pricing is the most efficient way to do that.

What we need to be really clear about is the journey from today to there, so that there is sufficient certainty in the investment climate and the regulatory and market environment. As I mentioned, the UK has been really successful in its decarbonisation, which is because we have had a very stable climate with things such as the capacity market and the regulatory regime, which ensure that the big companies and the private equity investment and everyone else continue to invest. It is important that we give clarity over that journey, and that offsets some of those concerns being talked about.

Q402 **Alan Brown:** Are you sure it offsets them? That is not what we are hearing.

Claire Dykta: Most of the concerns raised come when they talk about the risk associated with a change to the wholesale market or about having to price in the risk of uncertainty. If we can give a stable, clear, transformational journey when it comes to how we get there, that will help offset.

Q403 **Alan Brown:** I know that Ofgem is reviewing this as well. Can you give any insights about any observations you have made so far?

Akshay Kaul: It is too early for us to comment, Mr Brown. There are theoretical advantages to improving the granularity of locational signals, particularly if you have a highly congested network. But if we can deal with the congestion by changing the way we invest in the grid capacity, that will take out one of the main issues.

But if you do introduce locational pricing, that comes with a degree of disruption to the industry. We need to carefully assess whether the disruption costs of doing something like that would be worth the benefits. In due course, we will publish some analysis, as you say.

Q404 **Alan Brown:** What does it mean for consumers? Is there still the idea that where there is a high output of renewable energy, consumers will therefore benefit from much cheaper bills compared with those of people living elsewhere?

Akshay Kaul: The consequence is that if you live in Scotland, let's say, where there is a lot of renewable energy but not a lot of demand, the



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prices will be much lower in that region because there is a constraint in the capacity to transfer the power from Scotland to England. So yes, that would be one of the consequences of moving to a nodal pricing system.

Chair: By the sound of it, I should move to Scotland.

We have timed out, I'm afraid. Thanks to all four of you for your contributions; we are very grateful.