

Energy Security and Net Zero Committee

Oral evidence: [A flexible grid for the future](#), HC 113

Wednesday 7 February 2024

Ordered by the House of Commons to be published on 7 February 2024.

[Watch the meeting](#)

Members present: Angus Brendan MacNeil (Chair); Vicky Ford; Barry Gardiner; Mark Garnier; Sir Mark Hendrick; Mark Pawsey; Dr Dan Poulter; Lloyd Russell-Moyle; Alexander Stafford; Derek Thomas.

Questions 315 - 399

Witnesses

I: Rachel Fletcher, Director of Regulation and Economics, Octopus Energy; Johnny Gowdy, Director, Regen; Jason Mann, Senior Managing Director, FTI Consulting; Andy Manning, Principal Economic Regulation Specialist, Citizens Advice.

II: Nick Geddes, Business Leader, Whole Systems and Networks, Energy Systems Catapult; Nick Winser CBE, Electricity Networks Commissioner.

Written evidence from witnesses:

- [Octopus Energy](#)
- [Regen](#)
- [Jason Mann](#)
- [Citizens Advice](#) and [supplementary](#)
- [Energy Systems Catapult](#)

Examination of witnesses

Witnesses: Rachel Fletcher, Johnny Gowdy, Jason Mann and Andy Manning.

Q315 **Chair:** Good afternoon and welcome to the Energy Security and Net Zero Committee. This is our fourth session of our inquiry into a flexible grid for the future, and today's session is on locational pricing and strategic network planning. The first panel that we have today is a panel of four. I will ask the panel to introduce themselves, starting from my left, as ever, with name, rank and serial number—in other words, however you want to introduce yourself.

Rachel Fletcher: I am Rachel Fletcher, regulation director for Octopus Energy.

Johnny Gowdy: I am Johnny Gowdy, director at Regen.

Jason Mann: I am Jason Mann, senior managing director at FTI Consulting.

Chair: It is good to see you again.

Andy Manning: I am Andy Manning. I lead the energy networks and systems team at Citizens Advice.

Q316 **Chair:** Thank you, all four, for being here this afternoon. In this panel we are looking at the pros and cons of introducing locational pricing to the wholesale electricity market. I know that some people will emphasise the pros and some the cons, which is what we are looking for. First, we are looking for your views on nodal and zonal pricing. Does anybody want to kick off?

Jason Mann: Nodal and zonal pricing has been implemented in many jurisdictions around the world. FTI was commissioned by Ofgem to consider the pros and cons of introducing locational pricing in Great Britain. That is as opposed to the current system of a national pricing regime that we have had running since the 1990s.

Chair: To be clear on this one, when we are talking about Great Britain, we are talking about Scotland, Wales and England.

Jason Mann: We are talking about Great Britain, not the United Kingdom. Northern Ireland has a different approach.

We conducted this study, of which I will note the main three or four headlines. We found that, if we introduced locational pricing, there would be very significant consumer benefits over the forecast period of 2025 to 2040. The numbers that we calculated ranged between £28 billion and £51 billion of consumer benefit, depending on which scenario to net zero we follow.

One of our main secondary findings was that a lot of flexible assets on the grid, such as interconnectors and batteries, under the current market



regime, would receive the wrong signal in the wholesale market, which would occur somewhere between 20% and 30% of the time, depending on the asset. Interconnectors, sometimes even 50% of the time, will be flowing the wrong way. That is the second finding.

The third major finding is that consumers benefit in all regions of the country if we transition to locational pricing—in particular, nodal pricing.

Q317 **Chair:** If consumers everywhere are benefiting, are they benefiting by the same extent, and who is losing?

Jason Mann: If you were to input a pure version of locational pricing, consumers in the north of England would benefit the most, because their wholesale prices would fall the most. The losers in this particular change would be some generators—in particular, some northern-based generators that currently benefit from access to the grid in terms of constraint payments. If there is no access to the grid, they are compensated. Under a locational pricing regime, that would not occur, so they would potentially receive less revenue.

The other benefit is a pure efficiency one. Because we use our flexible assets better, we can serve the country's energy needs more efficiently.

Q318 **Chair:** I will come to all of the panel, but, Johnny Gowdy, from what I understand, you would probably be the other hand.

Johnny Gowdy: We have opposed a move towards nodal or locational marginal pricing. There are four main reasons for that. I will go through them briefly and we can dive into some of them in more detail.

The first thing to say is that a change of this nature, coming in the middle of our net zero transition, when our main priority at the moment is to raise investment and to push ahead towards a net zero power system by 2035, would be very unwelcome. We believe that locational marginal pricing will significantly increase both investment risk and ongoing operational risks. Those risks include price risk, volume risk, dispatch risks, and an ongoing risk in terms of the difficulty and complexity of operating in an LMP-type environment, which may favour some energy supply companies but probably not most. So the first thing is the risk.

The second thing is that the benefits that Jason has presented are very much overstated. As Jason has said, it is very much dependent on what scenarios you choose. It is not just us saying that. Several independent consultants and academic referees have reviewed those scenarios as well. In particular, what drives the benefits is the misalignment between network investment and build, and the deployment of renewable energy. In a modelled world, you can create all sorts of benefit pools by, basically, assuming that level of misalignment. The key message for us there is that we need to get our strategic investment in networks aligned with a net zero delivery plan and a spatial plan for energy. The good news is that a lot of that is happening, if we look at the central strategic network plan, for example.



HOUSE OF COMMONS

The third thing that we would say is that a lot of those benefits can be achieved by other means and much more quickly. Implementing LMP is probably at least a seven-year programme, with very large changes to the systems and processes that we use. Contrary to what Jason said, our system at the moment is not from the 1990s. It changed between 2001 and 2004, when we moved from central dispatch and a single price towards what we have at the moment, which are bilateral trading arrangements. We have developed a very rich and complex trading infrastructure with lots of ways in which we can trade energy. Within that, there are means by which we can send locational signals without moving to locational marginal pricing.

The fourth thing that we would say—and I am sorry that this is a bit of a spoiler—is that it is not going to happen. We have been talking about locational marginal pricing for almost two years now. There is no consensus across the industry that this is the right thing to do. The benefits have been heavily contested. There is no agreement, really, in terms of what the design would look like. From our point of view, it is time to move on from this endless discussion about changing the market towards what we can do within the existing market arrangements.

Q319 Chair: That was a counter to that and a voice for not changing things. Can I just be clear for people who are watching, because you have popped up against FTI? how does Regen interplay with generators? How have you become a voice for them? How involved are you with them?

Johnny Gowdy: We are absolutely not a voice for generators. Regen is an independent centre of expertise. We work across the whole industry. We work with renewable generators, and particularly those that are community-based. We are also heavily involved in the just transition agenda. If you want a declaration of interest, most of our revenues come from working with networks.

Q320 Chair: I just wanted that clarified. Thank you for that. Rachel Fletcher, Octopus is supportive of what FTI produced for Ofgem. Tell me why.

Rachel Fletcher: We agree with the points that Jason has made in terms of the opportunity for all customers everywhere to get lower-priced electricity, which is something that is very hard for us to ignore as a retailer responsible for putting out bills and collecting money from customers, many of whom are struggling to pay right now.

The analysis that was done on behalf of Ofgem is an understatement of the benefits. It is missing two really important factors. The first is that, under locational pricing, Scotland and the north of England would have some of the cheapest electricity across Europe. It is almost impossible to imagine that that would not attract additional investment into parts of our country that we know are desperately in need of investment and jobs.

Q321 Chair: A levelling up, do you mean?



HOUSE OF COMMONS

Rachel Fletcher: Yes, a levelling-up agenda, not necessarily taking investment from the south to the north, but bringing in investment that might have located elsewhere in Europe. I am happy to talk a little bit more about analysis that we have done on that front.

The second reason why we think that it is an underestimate is that none of the analysis done for Ofgem takes into account the opportunity to avoid or to reduce the amount of transmission investment that we need to get to net zero. The thing that exercises me the most is the analysis that shows that our interconnectors are flowing in the wrong direction. A lot of the network investment, which I suspect will be discussed in the second panel, is being driven by the fact that our interconnectors are doing the wrong thing for us.

We are also heavily dependent in a business-as-usual world on that transmission investment turning up on time, which, historically, it has never done. It is, essentially, a status quo. We are putting all our eggs in a basket that, historically, has failed us time and time again. We urgently need to make a decision on this. We urgently need to start engaging with investors on how we continue to make renewables an attractive investment. That is not a particularly difficult thing to do, but it is a very important thing to do.

I would like to quote something from a *Guardian* article, if I may.

Chair: If you can do it in 10 seconds, you can, because I have to hand over to Mark Garnier.

Rachel Fletcher: It says that, according to renewable investors, Government reforms to the electricity market “are ‘unworkable’ and will lead to ‘a train wreck’” and “will deter investment and make it harder for the UK to meet its renewable goals”. That is an article that was written in May 2012 with respect to the current CfD regime, which has been supremely successful in bringing in investment. My point is that investors are an incredibly flexible and creative community that will adapt.

Q322 **Mark Garnier:** Rachel, let me continue on exactly this point. I was up in the Shetlands the other day. You cannot move for wind farms up there, plus you have copious amounts of gas coming off the North Sea gas fields. You would not build a blast furnace up there. You would not put any number of industries up there. Is the problem not that there are a whole load of other things? It sounds absolutely brilliant. Why would you not have regional pricing to try to drive investment, for exactly the reasons that you talked about—the levelling-up agenda would benefit massively from this—apart from the fact that, when you want to locate a factory somewhere, what you are looking for are motorway connections, skills and workers to be able to do it. The example of the Shetland Islands is using hyperbole to make a point, but nobody would want to build a factory there, unless it was very specific.

Chair: Unless you are a Shetlander with the power to do so.



Mark Garnier: But you see what I mean. You would not manufacture stuff there, because it is really expensive to shift it around. Discuss.

Rachel Fletcher: It is not a panacea, of course. The siting of industrial load relies on multiple factors. Right now, we have data centres in Britain that are looking to expand their operations. They cannot get a connection in the south-east of England. There is no commercial signal, though, for them to locate in Scotland, which would be sucking up renewable energy that we are currently paying to switch off—customers are paid to switch that energy off.

Q323 **Mark Garnier:** Data centres would need a good internet connection.

Rachel Fletcher: I would be the last person to deny the role of Government here in matching cheap energy with a sensible industrial policy and thinking about other bits of infrastructure that could go alongside cheaper electricity in order to attract data centres to Cumbernauld, or electrolyzers to Scotland or the north-east of England.

The point is that, at the moment, the sensible thing for the system is for the next big data centre in this country to be located in the north of the country, and yet there is not a single automatic market mechanism to make that a logical commercial decision to make. We are having to get people into rooms to manipulate a regulated set of arrangements and see if there are some workarounds, which seems crazy when we could be attracting very big industrial load.

Q324 **Mark Garnier:** Jason, you want to come in on that. On the data centre point, I completely get it—why wouldn't you do it?—but a data centre does not have that many people working for it, so the levelling up is only marginal.

Jason Mann: I was just about to make the point that Iceland has very low-cost electricity and also quite a lot of data centres and aluminium smelters. Sweden has a zonal pricing system, and one of the cheaper northern zones of Sweden has just announced the construction of a green steelmaking facility in one of those zones. That indicates that, while there are going to be trade-offs and, as you say, it would be ideal to be next to a motorway, perhaps the inconvenience of being in a more distant location—

Q325 **Mark Garnier:** It is an economic decision, if it is cheap enough.

Jason Mann: Exactly, we see that happening a lot and there is no reason to expect that it would not happen in this case too.

Andy Manning: If I could just make a few observations about why this is important for consumers, there are a few main things. Our view is that reform to bring about improved locational signals is essential for consumers, and I can split that into two main reasons.



For consumers as a whole, we need to reduce the overall system costs and improve value for money. The costs that we are seeing that are related to constraints—this is where energy is being constrained, so it cannot pass over certain boundaries—have already reached the level of £1 billion a year and are expected to increase, so we need reform to address that.

Also, at a more individual level, we need reform to allow consumers to play their part in the energy transition. Consumers are sitting on assets that could be made use of, so we need to get the correct signals to make sure that consumers get full value for being flexible when they can, while also protecting those who cannot be flexible.

Clearly, following this debate, it would be preferable for reform to minimise disruption, but we are very clear that, until and unless a credible option appears that addresses those issues that I mentioned, LMP needs to stay on the table.

In terms of the analysis, I will not go into any detail, but Ofgem was very clear in its report and said specifically that it had not identified any realistic scenario where locational prices would not deliver for both consumers and the economy, which seems very clear to me.

My final point, just to broaden it out, is that this reform needs to be part of a coherent approach towards the energy system transformation. The retail market is going to change markedly in the next few years and we need to make sure that this process and the process of retail reform work closely together. From a consumer point of view, we need to design protections that work in line with this process. There are things that we can do to guarantee that everyone is better off from introducing locational signals, one of them being targeted bill support.

Q326 Mark Garnier: I will come to you, Johnny—I will let you have the last word, in fact, because you are the only one who is against all of this—but, Jason, look at the flip side. We have talked about why a business would locate to where you have the cheapest energy production. If I was an energy producer, I would start producing more energy where you have the highest marginal pricing. Can you talk about that and what the economic effects are of where the generation would go?

Jason Mann: In our work for Ofgem, we considered this particular issue and the extent to which it might be more economically attractive for generators to site in other parts of the country where prices were higher. We find that, for example, it is potentially more attractive for wind generators to site in the Celtic Sea near Cornwall rather than in Scotland, despite the fact that there is a lower wind factor in the Celtic Sea relative to Scotland. It is windier in Scotland than it is in the Celtic Sea area.

The value of electricity in that part of the country is intrinsically so much higher that it is potentially better to site the assets in places where they are most likely to be used relative to more distant locations where it is



harder to access the grid and where bottlenecks in the transmission system happen quite frequently. We would anticipate some movement if we went to locational pricing, which is what we see elsewhere in the world.

Q327 Mark Garnier: Are there any other market reforms that could help this move along? What else can we do?

Jason Mann: The obvious one that has been mentioned—and, no doubt, Mr Gowdy will mention it as well—is transmission charges, which have been on the table for 25 years. It is a much cheaper transmission charge if you site in the south of the country relative to the north, the intention being that that encourages generation to site in the south of the country relative to the north. Of course, that has not seemed to be effective to date. There have been countless proposals over the last 25 years to reform them and, while there have been some reforms, none seems to have been overly effective in encouraging generation to site in the areas of the country where we potentially most need that generation.

Q328 Mark Garnier: Johnny, as a capitalist, I am pretty sold on this idea. Tell me why I am wrong.

Johnny Gowdy: If I could just comment on a few comments that have been made, Andrew mentioned that Ofgem concluded that, in all scenarios, LMP would produce customer benefits. The end of that sentence was that, in all scenarios against a do-nothing counterfactual, LMP would produce benefits. The do-nothing counterfactual is probably less than doing nothing, because it ignores what is already happening. It is very important that we realise that no assessment has been made against what we could do by progressive reforms within the existing market arrangements.

Q329 Mark Garnier: Would you recommend that?

Johnny Gowdy: We would recommend that.

Jason mentioned moving wind to the Celtic Sea, which is a sleight of hand, I would suggest, because the FES scenario that you used in 2021 did not have any wind in the Celtic Sea, given that wind in the Celtic Sea was not considered in FES 2021. Since then, the Crown Estate has come in with a leasing round in the Celtic Sea. That is why there is interest in development in the Celtic Sea. It is not to do with pricing signals as such. In fact, we are going to have to build a whole bunch of new generation in the Celtic Sea in order to bring forward that wind. It is an example of where you can make things happen in modelling terms, but the reality of what happens on the ground is often driven by other factors.

We are all agreeing that we need to harness the power of flexibility from the consumer. It is a question of how we do that. Do we build that into the wholesale price or do we use other means of doing that?

Q330 Alexander Stafford: It has been an interesting conversation so far,



HOUSE OF COMMONS

talking about the benefits to consumers and to the economy. You highlighted the benefits to people in the north of England and the costs of it. Is that a fair assumption? What are the benefits for those people in the north, and even further north in Scotland, of locational pricing?

Jason Mann: We find that prices fall very significantly in Scotland if we move to a nodal pricing regime. We believe that Scottish prices would be potentially the lowest in Europe over a long period of time, by virtue of the fact that, under the ESO plans and the FES scenarios that they use in planning the system, they anticipate about 60 to 65 GW of wind generation in Scotland, while peak demand is 9 GW. Therefore, it follows that there will often be significant surpluses of energy, and prices would be very low under a locational pricing regime. Hence, it would seem advantageous to consumers in that part of the country relative to a national pricing regime. On top of that, as we have already discussed, it seems likely that industries and energy-intensive users would site in that part of the country, recognising the trade-offs relative to siting elsewhere.

Q331 **Alexander Stafford:** You have all mentioned Scotland, but it is the north of England generally.

Jason Mann: Northern England is similar.

Alexander Stafford: We would have the same rate.

Jason Mann: Yes.

Q332 **Alexander Stafford:** Quite a lot of the north of England—and I represent a northern seat—has those heavy and energy-intensive industries already there, so it has a natural advantage. On the flip side of that, if you are based down in the south, especially if you are economically vulnerable, this is going to be really bad news, is it not?

Jason Mann: When we did this work for Ofgem, I was not sure how the numbers were going to come out. When we economically analysed the outputs from our modelling, we found that prices in the south fall as well. The reason that they fall is by virtue of the fact that, as Mr Manning mentioned a minute ago, there would be no need to pay congestion or constraint payments under a nodal pricing regime. The impact of that reduction, which is a smeared charge across all customers, more than offsets the increase in the wholesale price in the south. That is why it is beneficial.

Andy Manning: I would just observe that there are options for how we implement this. I am not particularly advocating whether we would wish to, but, if you are concerned that a domestic consumer will not move house as a result of their electricity bill, you could choose to levelise the average bill between regions. In doing that, you would want to preserve the time of use signal. If, in one location, you want to avoid charging your EV at 6 o'clock, but, in another, you want to avoid charging it at 3 o'clock, you can preserve that signal but then levelise the average bill



impact. We do not have to take the north-south thing as a given, and there are options around that, which is clearly a policy choice.

Q333 Alexander Stafford: What I am hearing, basically, is that both of you have said that this is a great thing, with an economic benefit, and everyone is a winner, but that is not true, is it? There are always going to be winners and losers. Who are the losers? Who does not want to be in this situation? Where do you not want to live and what sort of socioeconomic background do you want to have? Who are the losers?

Rachel Fletcher: I want to make it really clear that this is not a zero sum game. This is not squeezing a balloon. This is shrinking the cost of our overall zero carbon electricity system. This is what we are talking about and this is why there is so much passion around this topic.

We can either go down net zero and add in £10 billion to £80 billion of extra cost to the country in doing so by sticking to a system and a market arrangement that was not meant, built or designed for a renewable system with millions of assets having to balance a system every minute of every day, or we can change it quickly and have grown-up conversations about investors with sunk renewable assets, who will, rightfully, want to understand whether what they expected from those investments is going to continue to be returned to them.

That grandfathering debate is one that we have time and again in this industry when there is big change. That is a debate that we really need to begin to have now, instead of looking for alternatives that are all, as far as I can see, second best and will add cost to the system rather than taking it away.

All customers will benefit. I completely agree with Andy. There is a choice for Government on whether they would like customers in the south-east to pay a little bit less and customers in the north to pay a little bit more, and to have more equivalence across the country, noting that we already have electricity prices that vary considerably across the country today.

We can also make sure that, as an increasing number of customers with electric heating and electric vehicles are flexing their demand to keep the cost of the system down, some of those benefits are shared with customers who might not be so active in this flexible smart energy system. We can use a price cap for that very purpose, which is why we are in favour of retaining the retail price cap, but I really do want to emphasise that this is not a zero sum game.

Johnny Gowdy: We all appreciate that it is not a zero sum game. In terms of the modelling, and the winners and losers among consumers, the initial wholesale price impact is, on average, an increase in consumer prices. In your estimate, it is about £12 billion over the period that was modelled. The assumption that we are then making is that there is a pot of value that is created by, first, savings on constraint payments to



producers, and, secondly, squeezing out the inframarginal rents or the surplus on producers.

The assumption is that that value is then distributed among consumers, which is how we get to the overall net reduction in consumer bills. That is a massive assumption, because there will be other claims on that pot of money. Some of it will certainly go to consumers, but there will be existing producers who have connection rights and will want to have their revenues protected or grandfathered, etc. We are likely to have to pay more in terms of cost of capital to attract new generators.

When we talk about benefits for certain regions, we are making an assumption that generators will still go to those regions, even though the price signal that we are sending them is not to go to those regions. That implies that we are making good their revenue in some other way. The focus needs to be not on this £50 billion overall consumer saving. We need to get into what the socioeconomic savings are that are coming from things like operational efficiency, for example.

Jason Mann: To answer Mr Gowdy's question exactly, the £51 billion number is the consumer saving. The socioeconomic welfare, as it is known, is about 50% of that. Roughly 50% of the benefit accruing to consumers is a result of more efficiently operating the system and more efficiently locating plant where it is most needed.

Johnny Gowdy: How much of that operational saving comes from interconnectors?

Jason Mann: I will just come to the other point first, if I might, which is to do with the other savings. £25 billion is, indeed, some transfers from generators, which pertains to two things. It is payments to generators for not generating. Over the 15-year period under that scenario, consumer payments to generators predominantly based in the north and in Scotland would be £11 billion, literally for nothing, and so that payment, under our working hypothesis, would no longer go on. Then there is a reduction also in the amount paid to some generators. The producer surplus, as Mr Gowdy correctly refers to it, would also go down, because they would be earning less money at some times when they are generating.

Q334 **Dr Poulter:** Mr Gowdy made some, I would say, fairly firm rebuttals. Mr Mann, there was a discussion about the £12 billion saving, and you were shaking your head. Do you want to rebut that point?

Jason Mann: That is not a number that I recognise, because the wholesale bill is a combination of the wholesale price and the BSUoS—balancing services use of system—charge, which incorporates the congestion or constraint payments made by the ESO to generators to either turn up in some parts of the country or turn down in others. That number has more recently been between £1 billion and £2 billion or even £3 billion a year. That is automatically recovered through the wholesale



balancing settlement code that governs how consumers face wholesale charges.

If we go to a zonal or even more extreme nodal pricing model, that BSUoS charge for constraint payments would fall to zero, technically, because all the constraints would be sold by the wholesale market, and so that element of the cost that customers incur is no longer incurred and, instead, is incorporated into the wholesale price. By virtue of the fact that you are no longer paying generators not to generate, it is a net saving overall, which is why the overall bill comes down from the wholesale price.

Q335 **Dr Poulter:** Mr Gowdy, you have had quite a good say. If you wanted to write to the Committee, I am sure that we would be very happy to take that.

Johnny Gowdy: I will point out where the number is in the report. I was referring specifically to the wholesale price element before you apply those other adjustments.

Q336 **Dr Poulter:** That is helpful. Ms Fletcher, could I turn to you on the nodal pricing point? Will you outline how zonal pricing might improve the effectiveness of time of use tariffs?

Rachel Fletcher: The research at the moment makes it clear that, when all flexible assets on the system—grid-scale storage, interconnectors and flexible consumer loads such as that from electric vehicles and heat pumps—respond to a single GB price, they are doing the wrong thing for the system for around a quarter to a third of the time. Storage might be releasing power into that part of the system when it is already flooded with renewable energy, for example.

Octopus is one of the companies that are already optimising. We currently directly control about 800 to 850 MW of aggregated electric vehicle load, for example. Instead of plugging a single GB wholesale price into our algorithm that optimises those assets in real time, we can be putting in 12 zonal or 50 nodal prices and make sure that electric vehicles in the north are sucking up excess wind instead of paying constraint payments. At the same time, electric vehicles around where I live might be being given a signal to stay off the system because there is not enough solar on the system, and the system is under stress.

We end up in a situation where the inbuilt flexibility that customers are increasingly paying for when they invest in electric vehicles or in a heat pump, instead of being redundant or even adding cost to the system, becomes a real asset that helps us get to net zero more quickly and more cheaply.

One of the reasons why we are so interested in this debate is that our view of the renewable energy system is one where customers are playing a really valuable role. Customers who play that role get some benefit from it in terms of lower prices. Our electric vehicle users, for example,



are saving about 75% of the cost of charging their electric vehicles by providing that flexibility to the system. It is also keeping the cost of the overall system down for everybody, so even people who are not participating in a flexible system can enjoy the benefits of us having invested in fewer assets and less infrastructure in terms of transmission and generation.

Andy Manning: I just wanted to build on that. I absolutely agree that time of use is a great opportunity for consumers to get value for their flexibility. There are two key things to add to that. We need to actively look at how we can reduce the barriers to participation in reacting smartly. How do we make sure that we support customers more who are typically overlooked? In general, we need to make sure that consumers can make informed choices. It will get more complicated, so how can consumers make informed choices between tariffs that are more complicated? We need to make sure that we have the right protections as we move into a more complicated world and are also breaking down the barriers to accessing these benefits.

Q337 **Dr Poulter:** Given the historical monopoly on energy pricing by the big energy companies, how would they view localised or nodal pricing?

Rachel Fletcher: We are a big energy company.

Dr Poulter: You are, but I was not referring to Octopus here; I was referring to the big six.

Rachel Fletcher: Any energy company with decent technology should be able to do what we are doing today. It is a question of building trust with your customers, because, as Andy hints, this is a change in consumer behaviour. Frankly, if you are relying on your energy provider to make sure that your EV is fully charged by the time that you need it to go to work, you need to have a lot of trust.

We need trust, but we also need investment in technology. Octopus has invested in both of those in terms of building trust through delivering the basics well and investing heavily in technology and constant R&D and innovation, so that we have understood increasingly over time how customers respond to price signals and how to interact with big assets like electric vehicles and heat pumps.

Q338 **Dr Poulter:** I will let you have 30 seconds, Mr Gowdy, and then we will draw a conclusion. If you have some written points to make, we would be very pleased to hear those.

Johnny Gowdy: We all furiously agree that we need to harness the power of flexibility from consumers, particularly commercial and industrial consumers, in managing these network constraints. Just to be clear, the LMP price signal is primarily driven by the occurrence of network constraints. There are other signals, such time of use signals, to do with the overall energy system balance, but we are talking about constraints, effectively.



Rather than building that price signal into the wholesale price that affects everybody, it would be better to use tools and markets that are available today, such as the balancing mechanism, flexibility auctions and local constraint markets, to send those price signals directly to those consumers who can best respond to them. If we are looking at big systems, big algorithms and big processes, there may be a better way of doing it.

In terms of practical ways in which we can move forward quickly, engaging with consumers and recognising that they are human beings who may or may not want to participate in those markets—some of them may not be able to, either because of their circumstances or, quite often, because they are constrained on the distribution network rather than on the transmission network—that is a much better way of approaching it.

Dr Poulter: I would love to hear more, but I know that we are constrained by time.

Q339 **Chair:** Do you want 20 seconds?

Jason Mann: I would say two things on that. First, some of those proposals are entirely untested relative to locational pricing, which has been in operation in many parts of the world for over 20 years. Secondly, under that regime, the constraint payments that generators in the north of the country continue to receive, which is money literally for nothing, would continue.

Q340 **Mark Pawsey:** If I understand right, if I go and talk to my constituents about what we have been talking about in this Committee, which is locational pricing, and say that, basically, that is using the network more efficiently and that one of the ways in which we release funding is by paying fewer constraint payments, my constituents would say, "Fantastic". They do not understand why we pay generators to turn off their equipment. Joe Public does not get that at all.

That sounds like a pretty positive tick, but one thing that my and everybody else's constituents would say is that it is like a postcode lottery. We are going to end up with people paying a different price in one area than another. We could have people on different sides of the road, if we use a local authority boundary to determine who is in zone A or zone B, or nodal area 1 or nodal area 2. A postcode lottery is not great, is it? Why should one consumer be paying a different price from another just because a retailer, presumably, or somebody has arbitrarily decided to put them in one zone rather than another? Rachel, how are you going to explain that to your customers?

Rachel Fletcher: We already have a postcode lottery, and I do want to make that clear.

Q341 **Mark Pawsey:** We have consistent pricing. I could change my price by shopping around in the market.



Rachel Fletcher: If you live in north Wales or in Scotland, you pay far more for your electricity today, by virtue of the network costs.

Q342 **Mark Pawsey:** The figure produced by FTI Consulting says “single price” and it has a map of the entirety of Great Britain.

Rachel Fletcher: That is for the wholesale element of your bill. Just to be really clear, the network charges are recovered regionally, and people living in low-density areas such as north Wales and Scotland pay a lot more for their network costs.

Q343 **Mark Pawsey:** So we are going to make the postcode difference greater than it was.

Rachel Fletcher: Andy’s point is that there is an option for Government, should they wish, to have postalised electricity rates to shift the costs around.

Q344 **Mark Pawsey:** Why should Government want to do that?

Rachel Fletcher: Your premise was that customers would not want a postcode lottery. If that genuinely was the case, money could be smeared around in order to keep the average bill in the south of England the same as the average bill in the north of Scotland.

Q345 **Chair:** Is it going to be cheaper than it is at the moment?

Rachel Fletcher: I go back to the point that this is not a zero sum game. We are talking about a lower overall electricity system cost in terms of network cost, wholesale cost and balancing cost. The benefits fall more generously on the north of England and Scotland through locational pricing than they do in the south. Should you wish to change the balance of where those benefits are falling, you could easily do so, particularly for domestic customers.

Q346 **Mark Pawsey:** Andy, there is a difference between the way retail customers would respond and the way businesses would respond to this. Businesses would understand the variation that we are talking about. We have to use some of those signals as part of the Government’s levelling-up agenda. On the other hand, how are consumers going to understand this?

Andy Manning: These are implementation choices. As you implement it, you can differentiate between customer types. You could choose to pull the locational signal to larger users. As Rachel was saying, you could choose to levelise between regions in order to get rid of what can be described as a postcode lottery. You can address that in the design of it.

Just to follow up on this not being a zero sum game, there is a broader point about public confidence in the net zero transition. There will be scrutiny on where profits are falling as we go through the transition. This is about moving profits from producers to consumers, and it is important



to demonstrate value for money at every part of the value chain for public confidence and consumer trust.

Q347 Mark Pawsey: Essentially, that is shielding some of the consumers. It just seems to me that we are also talking about needing to shield investors. Jason, how would that work? On the one hand, we are simplifying; then we are bringing back a further complication.

Jason Mann: I will touch on both shieldings first, if I might. On the consumer shielding, we examined a scenario in our report, where we averaged the price for all consumers while keeping wholesale prices varied by location. That is something that happens in lots of jurisdictions around the world that have locational pricing. We found that an inefficiency was created by that, basically because heat pumps and things like that are operating at times when they should not do in certain parts of the country. The costs are around £2.5 billion relative to that.

Q348 Mark Pawsey: Rachel's pricing system will encourage people to charge their EVs and use their heat pumps at the right time anyway, will it not?

Rachel Fletcher: It will, but only if, as a retailer, we are facing a wholesale price that we can then pass on to our customers. The choices that we make about how we charge our customers are driven by the prices that we face in the wholesale market. This is why, if we had locational pricing, and that was being passed through to domestic customers, it would, first and foremost, be passed through to the retailers of those domestic customers, who would then be incentivised to create the kinds of smart charging arrangements that I talked about.

If we do what has been done in Italy, for example, where customers are shielded from locational pricing as a first step—although Italy is about to remove that shielding, for the reasons Jason mentioned—we would face a single wholesale price for all of our customers, regardless of where they are in the country, as we do today. When we were optimising electric vehicles, we would do so according to that single wholesale price.

Q349 Mark Pawsey: Johnny, does it make sense to effect a change such as this, which reflects the true cost, and then to introduce these shielding interventions that take a simple process and make it more complicated?

Johnny Gowdy: Most of the conversation about LMP and customers has been about this issue of how we shield them from it. Just to be clear, you mentioned a postcode lottery, but it is not really a postcode lottery. It depends on where you are connected to the network, not on the postcode. That is the important thing. Is there a level of constraint on the network? Is that constraint for generation or for demand?

Just to be very clear, that position will change rapidly as we go through the energy transition, as we build more capacity and as we bring in more demand and more generation. You may be sitting somewhere at the moment and saying, "This looks like a good thing for me right now, because generation is constrained nearby. Therefore, I benefit from low-



HOUSE OF COMMONS

cost energy". Someone then builds a new 2 GW interconnector to Stornoway and, all of a sudden, that balance changes.

We are entering a period of rapid change, and the question is whether we want to expose all consumers to that via a wholesale price or specifically target those consumers who are able to respond to that through flexibility markets.

Q350 Mark Pawsey: So there would be a greater level of uncertainty than we are perhaps being led to believe.

Johnny Gowdy: I would say so. We are going through a period of massive transition. Were we in steady state, with no major changes in capacity, etc., marginal price signals would make some sense, but, if I am building a wind farm or a nuclear power station that is going to take 10 years, I am not going to look at the marginal price today and say, "That is a good place to be". I am going to want to know what that looks like in 10 years' time.

The same thing goes for demand, if you are building a smelter, for example. One thing that might move is cryptocurrency, because they are pretty nimble at moving and have no real ties. They might be one example on the demand side that can respond to this.

Q351 Chair: We are coming to the end of the main set of questions. We have about 10 minutes for supplementaries. I could see Jason Mann talking to himself, so I will give him 20 seconds.

Jason Mann: I was not doing that at all. I was just going to make a point about the uncertainty that Mr Gowdy was referring to. There are financial contracts being developed in other locational markets, which are called financial transmission rights, that allow a lot of that uncertainty to be resolved for any individual participant.

Q352 Vicky Ford: None of you is convincing me. I come from a background of raising money for large-scale infrastructure. Rachel, you said that it is not squeezing the balloon. We need a lot more investment in renewable technologies. Johnny said that, if you make a major change, that could create long-term or even medium-term uncertainty. I get how that could hit investment, but I absolutely hear you that paying people to do nothing is a waste of money. We need a mechanism to get big-demand users, such as data centres, to locate close to where we have a lot of potential renewable resource. We have to find a way to do that.

I was listening to what you were saying, but I am not convinced that this is necessarily the solution. I would have liked to have time to ask you about potential solutions other than having to recommend A or B. I am concerned that, if we take this solution, we will stop people wanting to put more new renewable energy up where the wind blows and where we have great tides, etc., and that we will waste money. That is just a point that I making. Am I wrong?



HOUSE OF COMMONS

Rachel Fletcher: What you have just said has a lot of important points within it. We absolutely need to keep investment flowing into renewables. We need an additional 30 to 50 GW of renewables on the system.

Q353 **Vicky Ford:** What solutions are there other than this zonal pricing?

Rachel Fletcher: Can I talk about a challenge that I worry is being forgotten about? Andy mentioned it. I worry about us losing public and, therefore, political support for net zero, if and as it becomes too expensive, particularly if it seems to be too expensive because wind farms are being paid not to run.

Q354 **Vicky Ford:** I am going to stop you. If you are putting in new renewable energy or using your spare wind to make hydrogen, I want to see local communities getting the benefit of that local power. My understanding is that, under current law, the Supreme Court has said that, in a planning decision, you cannot take into account the local benefits to the community of giving them cheaper energy. Do we need to change the law to enable that sort of solution?

Rachel Fletcher: Locational pricing would allow local communities to benefit if they are next to a wind farm.

Q355 **Vicky Ford:** Would changing planning law as well?

Johnny Gowdy: They would have to be next to a wind farm that is constrained. If you are sat next to a nuclear power station, you could live a kilometre away but not benefit from cheap energy if that nuclear power station is not constrained. Regen has produced a couple of reports on the sorts of things that you are talking about in terms of local supply models, of which there are several. There is the energy club model in Bethesda, north Wales.

Vicky Ford: So we have the tools already to do it.

Johnny Gowdy: Bristol is looking at collaborative sleeved PPAs to buy energy on behalf of companies and businesses there, etc. There are lots of ways in which we can support, and they could be improved. One of the things that we trip up on is regulatory barriers. In particular, in the way we do network charging, transmission charging or DUoS charging, it is very difficult to avoid paying for all of that, just because you are using energy locally, unless you go the whole hog and have a private wire or an independent network that you set up.

There are lots of ways of doing that, and that is a much better way of doing levelling up, because you are targeting where you want the energy to go, not where there are network constraints, which is the happenstance of our historic investment and perhaps delays in future investment.

Q356 **Mark Garnier:** Jason, can I come back to my original question about the market forces that are driving where you put industry? The one thing that



HOUSE OF COMMONS

I wanted to come on to on that particular point was the fundamental problem that you have different types of energy for different areas. I used the hyperbolic reference of the Shetland Islands, which are very windy. We can talk about huge amounts of generation of wind and solar, but it is neither dispatchable nor baseload. I am convinced of the basic argument for nodal or regional pricing, because it can drive exactly these behaviours. None the less, you are still going to have to put your nuclear power station somewhere—ditto for gas and coal—so does this mean that you have to have them all across the country? We do not want coal or any of this stuff, but you are going to have to, because you are not going to get that dispatchability of wind or solar.

Jason Mann: Obviously, you cannot dispatch wind or solar and, therefore, you need to consider the other options, some of which you mentioned just now. Most of the nuclear plant planned is in the south of the country, which is, by definition, more beneficial by virtue of the fact that electricity is scarcer there.

In terms of managing intermittency, which is the point that you are referring to, the obvious sources are the flexible assets that are already emerging on the system, such as interconnectors and some of the things that Rachel was discussing in terms of vehicle-to-grid charging and batteries. Where they site and how they operate once they have sited is critical.

Interconnectors, for example, are very good at balancing, but you have to send them the right signal. Often, we will be flowing out to France from Kent, when, really, we should be flowing inwards. Equally, we will be flowing sometimes from Norway to Scotland or to northern England, when we should be flowing out. Using those interconnectors more astutely, shall we say, by using the right wholesale prices that reflect the transmission grid would mean that we could balance the system much more efficiently.

Finally, if we site batteries in areas where there is surplus wind at certain times, that will obviate the need to build significant transmission network. We found that that was one of the benefits of locational pricing.

Johnny Gowdy: Could I come in on interconnectors? It is a really important point. It is absolutely right: interconnectors are not working for us at the moment. We cannot wait for six or seven years to implement LMP. The Committee could recommend to Government to look specifically at interconnectors. We have had a decoupling from Europe. They are not working efficiently at the moment, and the system operator does not have the tools to affect the flows and capacities. That is a definite thing that the Committee could recommend.

Q357 **Chair:** Three things occur to me. The first is about asset locations. Let me put a devil's advocate question to Jason Mann—it is also a devil's advocate question to myself as a Scottish MP. You are talking of moving to zonal and nodal. A lot of assets have been built in Scotland with the



HOUSE OF COMMONS

idea of a GB pricing. If you now suddenly move to zonal and locational pricing, the consumer in Scotland would benefit from that already being placed there, but that might or might not have been built—you can tell me—had the locational or zonal pricing been in place at the time of construction.

Jason Mann: Many of those assets are funded by a mechanism called contracts for difference that the Government fund. We have assumed that that process would continue anyway, which would shield the wind generators from the locational price. Moreover, it is worth mentioning that we assume that the existing contracts for difference are grandfathered over to the new regime, so the rule of law and rule of contract struck previously would be respected. That is in our overall evaluation.

Q358 **Chair:** That saves my next bit, because I thought that all this was going to affect the contracts for difference that this has been based on, so I assume they stay the same.

As a last point, just for clarity, there was a private discussion between me and Mark Garnier as you were speaking. Rachel made the point of less dense areas having a higher infrastructure cost versus the south of England.

Rachel Fletcher: They do currently.

Chair: I presume that both areas would maintain the same infrastructure costings, but would have lower energy costings, making the overall package lower. Are we correct in that assumption? Is that what you were saying?

Jason Mann: Yes. We did not really look at the infrastructure costings per se. I would emphasise that, if you move to more locational pricing, everything else being equal, you would need less transmission. Therefore, the overall increase in transmission bills paid for by consumers would be lower.

Johnny Gowdy: We just said that the contracts for difference would make up the revenue for the generators, so the price would be lower for Scotland, paid for by contracts for difference, which will be paid for by consumers all over GB. If you can persuade the rest of GB that they ought to pay subsidies, contracts for difference, capacity market, RAB, and cap and floor, in order to make up generators' revenue, and then offer cheap energy to Scotland, that would be a whizz.

Q359 **Chair:** Jason, could you write us on that?

Jason Mann: I am very happy to. Essentially, it is a policy decision as to how you choose to recover these additional costs over and above the market.

Rachel Fletcher: We have talked about alternatives. I would really emphasise the point about interconnectors. Apart from the network and



the transmission changes that have been talked about previously, the other alternative that is often talked about is whether we can just use the balancing market more. This is akin to saying, "I am not going to fix my roof. I am going to pay the decorator to come in every time it rains and I have water stains on my wall". We can either get a market that gives the right signals to bring interconnectors into the country or export when they should be, or pay them to do something that they were not going to do in the first place. You can draw your own conclusions on which is better for the country.

Q360 Lloyd Russell-Moyle: This sounds all very good. It is the same with more effective time-of-use tariffs. Would those tariffs not mean that, marginally, a poor person in the south who is time-poor—we know that the people who are time-poor are usually cash-poor—will be stung far more and a person in the north who is time and cash-rich, who can invest in an electric vehicle to plug in, will end up laughing to the bank?

Are we creating a system that exacerbates inequality? How do you prevent that exacerbation of inequality from continuing? The people in the public we are going to lose are the poorest people with the least time, who do not have electric vehicles or batteries and probably will not for the foreseeable future.

Rachel Fletcher: That is a really important question. Without being facetious, we know what the income distribution is across the country. Ofgem looked at the distributional impact of locational pricing and found that it was positive on the whole, for the reasons we talked about earlier.

Your point was specifically about time-of-use tariffs. The first thing I would say is that, as far as I can see, for the foreseeable future, time-of-use tariffs are going to be opt-in. Customers will continue to be able to have single-rate tariffs unless they choose for whatever reason to opt in.

Secondly, we are seeing a much more sophisticated evolution of smart tariffs than perhaps might have been envisaged four or five years ago. We have very sophisticated direct automated control of electric vehicle charging and, increasingly, heat pump storage. By the way, we are already looking at whether you can use heaters as night storage. Customers, typically in lower-income properties, with night storage could be participating in the intelligent optimisation of their electric heating.

We are also seeing the emergence of products where customers can opt in to take the upside of demand-side response without any downside risk. We are seeing that with National Grid's demand flexibility services, for example, where customers get paid to shift out of peak but face no penalty—

Chair: I am afraid I have to stop you there. We are out of time. Thank you very much, panel. This has been an electrifying discussion. There was a lot of voltage and wattage still to go, but unfortunately time, as ever, has beaten us. I was very generous there at the end.



HOUSE OF COMMONS

Thank you to the panel for coming along and for contributing to the discussion. Mr Gowdy, I was aware that you in particular were pressed for time by a number of us.

Johnny Gowdy: I will send a written response.

Chair: Yes. I also asked Jason Mann for a written response. To the rest of the panel, if there is anything else that you feel that we did not get to touch in our rushed hour, please write to us. This has been a fascinating discussion. We will take a minute's break and be back with the second panel. Thank you.

Examination of witnesses

Witnesses: Nick Winser and Nick Geddes.

Q361 **Chair:** Welcome back to the Energy Security and Net Zero Committee for our second panel. I will allow the panel to introduce themselves as they see fit. I will start on my left, as ever.

Nick Winser: I am Nick Winser. I have a number of roles, but I am here as the Government's Electricity Networks Commissioner and the author, along with the Energy Systems Catapult, of the report on accelerating strategic transmission.

Chair: That is an important report that came to Government.

Nick Geddes: I am Nick Geddes from the Energy Systems Catapult. I am the business leader for the whole systems and networks part of the business. I am part of the team that helped Nick in his role delivering the companion report, which you may have also seen.

Q362 **Chair:** The focus of the discussion today will be the recent reports into accelerating the delivery of electricity transmission infrastructure. To begin with, please summarise your main comments on the Government's response. Where are they on track and where are they falling short? Where are we at the moment?

Nick Winser: The Government's response was in the autumn statement. It was very pleasing, in the sense that they accepted all the recommendations in the report and went slightly further on one or two issues, particularly on encouraging investment in green industry manufacturing. I was very pleased with that.

Since delivering the report in June, I have not been involved in any of the further work on it. I was engaged to deliver the report and that is what I did. I have looked through the Government's response to the report, which was pleasing. I do understand from contacts in the industry, however, that there is a lot of activity going on in the industry.

Q363 **Chair:** On that point about contacts in the industry, I spoke this morning



HOUSE OF COMMONS

with John Pettigrew at the National Grid. He said a number of things but welcomed the speeding up of planning. People are talking about making 500 GW. He said that 60% of that will never come to fruition. He made some points—I might mention them—but what would your points be to speed up further what is a swamp of a process?

Nick Winser: The report that we wrote tackled the speeding up of building transmission. We did not tackle the famous queue.

Q364 **Chair:** Would you like to have tackled the famous queue?

Nick Winser: We were not asked to tackle the queue. The queue is enormous.

Q365 **Chair:** I am asking you to tackle the queue at the moment. How would you do it?

Nick Winser: I would not seek to give advice on that. I have not done any work on it. Nick may have some comments on it. What I would reflect, though, is that an awful lot of work has been done by ESO recently. There have been announcements on trying to sort out the queue. That is not my area of expertise. I am not sure I could be helpful to the Committee.

Chair: That is fair enough.

Nick Geddes: I have no further comment on that. There is an action plan, which has been put forward by National Grid and the Government. That was pretty comprehensive. We still think there is much more to do. It is still going to be a very challenging area. It is not an area that we looked at in detail either.

Q366 **Chair:** Of the 500 GW that I mentioned, only about 200 probably need to be built. There is more in the pipeline. If the likelihood is that 60% will not be built, it takes you into the ballpark of 200 GW. It seems like there must be a better way of teasing through this because there is an awful lot of trash in the system.

Nick Geddes: There were some steps taken to have a sort of amnesty on some of the things in the queue that might be more speculative in nature. That is why you probably see an excess requirement in terms of the generation coming on to the system. Some of that will be speculative.

National Grid has taken steps to try to remove some of that. I could not comment on how successful that has been, but there are other steps within its plan. It is looking to go beyond that, but that was one of the initial things that it looked to do.

Q367 **Chair:** Given the complexity of developing such a plan, what should the Government do to provide investors with greater clarity and long-term certainty moving forward? Do you have any thoughts on that?

Nick Winser: On the queue or transmission investment?



Chair: On transmission investment.

Nick Winser: The report has 18 or 19 recommendations that should build investor confidence by giving a much clearer view of the future energy system.

In a way, the centrepiece of the report is the strategic spatial energy plan. That is a regular plan that is developed in the proposals here by what is now the national energy system operator, working with DESNZ and regulated by Ofgem in doing so. That plan does not have to be definitive and I am sure it will not be in all aspects, but it will be in the public domain. It is a fantastic opportunity not only for communities to understand what is proposed but for investors to understand the opportunities that are out there.

Currently, investors are rightly trying to judge how big the hydrogen market is going to be, how big the nuclear contribution is going to be and what hydrogen might be used for. All of that interacts with the electricity system. Investors are also trying to judge the scale of need for investment in the electricity infrastructure, in particular to enable different parts of our coastline to have the capacity to take new connections. The strategic plan will give that overview to investors and therefore create a lot more investor certainty.

Chair: There was a lot in that, but I have to move on to Barry Gardiner.

Q368 **Barry Gardiner:** In the Environmental Audit Select Committee, which is also looking at the grid, it was suggested that a five-year cycle of review might not be flexible enough. The emphasis was less on the timescale and more on the flexibility that was needed. There were real concerns that it needed to be more flexible. Would you support that, Mr Geddes?

Nick Geddes: Could I just clarify? Is that to do with planning? Is that the national policy statements in particular?

Barry Gardiner: Yes.

Nick Geddes: There is a commitment in the transmission acceleration action plan for the civil service to take that forward in the next Parliament. There was not an opportunity to look at that in this Parliament. There are some loose ends. The Government response to Nick's work was really comprehensive, but, as I say, there are a few areas that are going to flow through to the next Parliament. That is one of the areas where that flexibility is a key thing to address. It is unresolved.

Q369 **Barry Gardiner:** Are the various institutional responsibilities of DESNZ, Ofgem and the national energy system operator in the planning of transmission infrastructure clear enough?



Nick Winser: Under our proposals, they would be very clear. We are introducing new aspects. One of the pieces that is attached to the catapult's part of this report is a piece on institutional arrangements.

At the highest level, we are very clear on who does what in all of this. NESO will turn the handle on the plan. It will have a regular interaction with DESNZ to identify what the current view of energy policy is, accepting that some things will be unresolved at all times. In our proposals, we have taken Ofgem out of looking at regulation scheme by scheme, or group of schemes, and put it to regulate the production of the plan.

At the highest level, what we have suggested has some clarity. We have suggested that the institutional arrangements should be considered further.

Nick Geddes: NESO is fledgling in its new responsibilities and its new purview over the whole system. With the change in its ownership structure and relationship with Government, there are inevitably going to be changes in these relationships. The institutional boundaries between Government, Ofgem and NESO are going to be clarified over time. That will inevitably be a bit of a work in progress, particularly with this being about the whole system.

The key interface for the work that we were doing and looking at is that interface into the strategic spatial energy plan. That is where Government start to articulate to NESO what its policy position is so that NESO can take a whole-system view and deliver the strategic spatial energy plan. It will be interesting to get clarity on how that works.

Q370 **Barry Gardiner:** As part of NESO's network planning work, we need to have clear strategic decisions about the investment needs. Have the Government recognised their responsibility in that area sufficiently?

Nick Winser: The recommendation to have a strategic spatial energy plan gives the opportunity for Government to update that plan regularly with its current view of energy policy and what that is likely to lead to. Very helpfully, it also gives a regular soft challenge to Government about what we can say about this particular issue in the complex make-up of the energy system.

I am emphasising that because it is a terribly useful thing. Because the Government do not understand the whole system and how it comes together, in delaying a decision, maybe legitimately to see what the market will do, they quite often do not fully understand the cost of that delay. It is quite easy to look at the cost of making a decision, but in a transformation that is this big and this complicated we need to try to be very analytical and transparent about the costs of delay.

The strategic spatial energy plan gives a chance for an iteration on a regular basis that says, "Okay, you do understand this, don't you?" This



would be from NESO. "We understand that you want to leave that aspect without a particular mechanism or change the market, but that will delay investment on a set of other things". In this case, we are talking about the network.

The fact that we are so far behind on developing the network is in part because the system in which we currently operate is one where not only does it take a very long time to build some of these strategic links but we start behind the decisions about generation and on the supply side.

Q371 Barry Gardiner: In terms of the recommendations that this Committee might make in its report, you would favour us making a recommendation that the Government should give clear strategic direction on investment decisions, taking account of not only the immediate cost of proceeding but the cost of delay.

Nick Winser: Yes. Can I just try to put it in my words?

Barry Gardiner: Please do, yes.

Nick Winser: I very much understand the idea that waiting for innovation and having optionality has a value.

Barry Gardiner: Doing something also has a value.

Nick Winser: In some cases, although not all, it is worth trading a bit of space for innovation and optionality for cracking on, particularly if the thing that you are talking about takes a very long time to build. The recommendation from me would be to make sure that in this process we are, as best we can, balancing those two features.

Nick Geddes: The one comment I would make to the Government is that we have been in the phase of decarbonising the electricity system, predominantly generation. We are going to move into a phase of decarbonising other parts of the sector. The complexity of that transition is going to increase. The breadth of Departments across Government that are going to be involved in that is also going to increase. There is a challenge for Government to think about how it brings these decisions together.

Q372 Barry Gardiner: The Government's response said there were going to be three plans coming together at different times. This was the other thing that I wanted to ask you. Given that they are going to be renewed separately, the strategic spatial energy plan, the centralised strategic network plan and the long-term centralised strategic network plan, how is that all going to provide investors with security and motivation?

Nick Winser: I can answer this point briefly. These documents are in a hierarchy. We believe in one strategic plan, and then we will have a whole array of network plans below that. I am trying to draw the distinction between an energy plan and a network plan. They are all



needed, and I am not troubled by the timescales that are being talked about.

Q373 Vicky Ford: Can I first make a quick comment? Nick, thank you so much for taking on this role. It is going to be an absolute curate's egg or whatever. In my part of the world, you have consumers who want secure, cheap, clean and green energy. They believe in the environment. You also have people who are incredibly concerned about having huge transmission networks running across East Anglia. They are both environmentalists. I do not know how you deliver both of these things. Thank you for doing the job to bring the vision and square that circle. It is a nightmare.

I have some quick questions. In order to have your long-term centralised strategic network plan ready in 2026, when do you need to have your strategic spatial energy plan ready? Is that the right question? Is that the logic?

Nick Winser: I do not quite have those titles in my mind. I am sorry. There is so much jargon and so many acronyms. The new NESO has a lot of work to do on the strategic spatial energy plan, the SSEP. Trying to get it ready as soon as possible is very important.

Q374 Vicky Ford: When do you want the SSEP to be ready?

Nick Winser: I would say as soon as possible. Before Nick chips in with a date—

Q375 Vicky Ford: Are you confident that it can be ready by this summer? If so, what do you need Government or others to do to make that happen? I am fed up with "as soon as possible", etc.

Nick Winser: The most important thing is not to make perfect the enemy of good. We do not have any sort of spatial energy plan at the moment. Therefore, something that is quite high level and may not be very detailed in itself will have a huge impact. Rather than racing to produce something perfect, starting to lay out where things are going to be on a map and what that means in order to inform the network plans will be valuable. Can I let Nick talk about the timescales?

Q376 Vicky Ford: If the NESO has to start working on this, does it have the tools? If not, what resources does it need? How do we make sure that the people we need to produce this plan—I agree that perfection can sometimes take too long—have the tools and can work to a timetable? How can we support them with that timetable?

Nick Geddes: Producing the SSEP is going to be dependent on some other things, like the availability of data and the digital side of things.

Q377 Vicky Ford: Do you have access to the data that you need at the moment?

Nick Geddes: We are not producing it; NESO is producing it.



Nick Winser: NESO does.

Nick Geddes: There may be other things it needs to get access to, but it should have the powers and the ability to get some of those things.

Nick Winser: ESO, which is going to move into NESO, already has a very significant staff of very bright people who do a lot of this type of work. I understand that they are going to be recruiting heavily to do all this new work. That is good.

Q378 **Vicky Ford:** You are going to walk out of the door having met this Select Committee and said that there is not a single thing you want to ask the Select Committee for to make sure that you can do this job. You have the people you need; you have the resources; you have access to the data. If you want us to say to Government, "Make sure you have the people, the resources, the access to data and the planning", say that now because then we can say it.

Nick Geddes: It is hard to comment on behalf of NESO. They are the people who will know. They will be thinking about this. The Government are going to commission them formally to do the SSEP. They will already be thinking about this. They have already done things like the future energy scenarios. They will have that data and they will have worked through some of those approaches before.

To Nick's point, this first iteration is effectively going to be a minimum viable product. It is not going to be the all-singing, all-dancing version that you might see in a few rounds' time. There is a degree to which it needs to be done to the right or a good level. Whether or not they have the resources, they are the right people to be doing it. They have the experience of having done things like FES in previous iterations. They should be able to do it, but I cannot comment on whether they are missing any datasets and things like that.

On the resourcing side of things, the organisation as a whole is recruiting. I would have thought that it is one of their top priorities to get this right because of the emphasis that has been given to it in various forums. Beyond that, it is hard to comment whether they do or do not have the exact datasets to be able to do what they need to.

Q379 **Vicky Ford:** The recommendation from both of you is that we should go for, "Keep it simple. Get it out there as quickly as possible. Even if it is not perfect, get it out there".

Nick Geddes: Yes.

Nick Winser: Keep it high level. There are other things that we will need. It seems to me that an awful lot of good work is going on on this. There are other things in the recommendations that are extremely important.



HOUSE OF COMMONS

Part of the benefit of doing the SSEP is to allow discussions with local communities to be more respectful and more transparent. Having design principles, having a plan and updating national policy documents is all terribly important.

We have also suggested in here that a national campaign to help to inform the public on the needs of the energy transition would be very valuable. I know this can seem like a “wouldn’t it be lovely?” point, but it is very important that we take people with us, putting much better information in front of your constituents so they can understand the political and economic environment and context. We have recommended that Government should lead that with the developers.

Q380 Lloyd Russell-Moyle: We heard in some of our previous sessions maybe a mild frustration that your report does not go far enough in terms of ambition, particularly around the planning process versus the build times. Bearing in mind we all know that preparation is two-thirds of any job, is it right that the planning will take seven years? That is the target that you are working to. It could take even longer, but the target is seven years. The build time is only two years in many cases. Is it possible to get that ambition down? Should we have aimed to have that ambition down to at least four years or even two years?

Nick Winser: I am absolutely aware of those comments that were made to the Select Committee. That is a misunderstanding. The comment was made that we are suggesting seven years of planning. We are not. We are suggesting seven years for the whole process. This is very important. In those seven years, we are suggesting that it will take roughly two and a half years to build it, two and a half years in planning and a couple of years to decide the need case, design and so on. I was a bit surprised to hear the comment that we are suggesting seven years of planning.

In the light of that breakdown, should we be more ambitious? I would absolutely say no. This is the right timescale. It fits with the timescales for the changing generation mix, the changing demand mix and location. Nothing is moving more quickly than that, but it is moving more quickly than the current 14 years. Seven years works.

What would be the cost to society of going more quickly than seven years? We would start to encroach on decent planning activity. We would start to encroach on acknowledging the legitimate rights of communities and individuals to be heard in a proper way and responded to in the planning system. We would start to encroach on the Planning Inspectorate’s ability to do a professional job in looking at these things. We would start to encroach on the time it takes to do a professional job building these assets.

Seven years is the right number. Only two and a half years of that is the planning process. This is major infrastructure going through communities. It would be wrong to try to do it more quickly, in my view.



HOUSE OF COMMONS

- Q381 **Lloyd Russell-Moyle:** With that clarity, which helps everyone, do we need to be clearer on that two-and-a-half-year target? That is the bit that we are talking about in terms of planning and both local government and national Government intervention. What mechanisms should we be employing to enforce that target and make sure that two and a half years does not turn into seven years?

Nick Winser: At the moment, all of this infrastructure is covered by the Planning Act 2008. People say to me, "Planning needs to be ripped up and started again". I profoundly disagree. The Planning Act 2008 is a sensible piece of legislation, in my view, because it gives us a sensible process for deliberating and talking to communities in a respectful way.

What has happened is that some of the timescales within that good legislation have not been adhered to. Particularly, the pre-application phase of the DCO process has ballooned in recent years. We know that. That is due to a lack of clarity coming from the NPSs not being up to date, a lack of a strategic plan to which local communities and the developers can refer to show why they have come to that view, and a lack of design principles that can allow communities to understand why particular proposals are being put in front of them.

With that extra clarity and a respectful and transparent debate, we can then adhere to the detailed timescales in the Planning Act 2008, which will get us through to a two-and-a-half-year planning cycle. It is not that the initial legislation does not have those timescales in it; it does. We need to provide the context, the documentation and the evidence in a much more general way to society so that the Planning Act 2008 can be made to work.

- Q382 **Lloyd Russell-Moyle:** Is it not in some people's interests to drag the process out? They are not really good-faith actors in some of these planning processes. They just want to say no. They are effectively nimbys. They can use the system to drag pre-planning out and drag the consultations out to the point where local authorities end up overwhelmed, which means you get these extended times.

Nick Winser: It does not have to be like that, under the legislation. It relies on very professional behaviour by the developers. They need to go in front of communities with very well-worked plans. There should be a real responsibility on the transmission companies to come forward with very well-worked plans that can go into pre-application consultation and can be well supported through that.

The developer is entirely entitled under the 2008 Act to draw that process to a close in the right timescale and send that into the Planning Inspectorate. Having been given a well-worked case that has been well consulted on with communities and individuals being properly listened and responded to, the Planning Inspectorate can make a recommendation to the Secretary of State and the Secretary of State can make a decision.



HOUSE OF COMMONS

The system that we have suggested enables the timescales in the Planning Act to be adhered to in a way that respects communities. The key actors can adhere to those timescales. People will say, "Well, you will just get a judicial review at the end of that". All of these processes have that as a possibility. If you have adhered to the letter and the timescales of the Planning Act, that should be a much smaller risk to developers.

Chair: Time is beating us. I am sorry. I have to move on to Mark Pawsey.

Q383 **Mark Pawsey:** I just have a quick one. Lloyd Russell-Moyle spoke about nimbys. There is an acknowledgement that there are people who do not want this development in their backyard. Mr Winser, you spoke about the design principles being important. How will the design principles encourage communities to be more sympathetic to the investment that needs to be made?

Nick Winser: The design principles will, among many other things, include a transparent narrative on how we make those key decisions about how much should go under the sea, how much should go on land but under the land and how much should go on land and over the land.

Rather than making the case from no knowledge, going from the bottom up in every case, those design principles should demonstrate how developers and NESO come to the design that is being proposed. That will enable communities to understand much more quickly the economic and engineering context and the very significant differences in environmental and economic impact that come out of different designs. That should enable a much more respectful and effective interaction with local communities.

Q384 **Mark Pawsey:** I put it to you that we have had a big national infrastructure project, HS2, which arguably is rather more expensive than it might have been because we conceded to communities that we were going to put it in artificial tunnels. How are you going to prevent every community faced with a need for infrastructure from saying, "We want it underground and not visible to us"?

Nick Winser: HS2 was done under the hybrid Bill system. As I understand it, although I am not an expert on the rail industry, a lot of the consent that was granted under the hybrid Bill meant that HS2 had to satisfy local authorities.

We are doing this under the 2008 Planning Act, where the responsibility of the developer is to consult, listen to and respond to individuals, and the responsibility of the planning inspector is to judge the merits of the case and make a recommendation to the Secretary of State. It is a different system.

Q385 **Mark Pawsey:** Won't every community say, "If we are going to have an infrastructure improvement, we want it to be underground"?



HOUSE OF COMMONS

Nick Winser: I am sure that in some cases communities will say that. It will help if they understand better the trade-offs and why the design has come forward, but I am not being naïve about it. Some people will still not want that infrastructure.

The Planning Act 2008 is designed to balance, in my view, the right to object individually and suggest other things with the need to meet societal goals. It does that in quite an elegant way.

Q386 **Mark Pawsey:** Will the standard design principle—this means that the developer will be able to say, “This is what it will look like”—assist in that?

Nick Winser: I think so. The industry will be able to say, “This is why we have suggested that this bit goes underground and this bit is overhead. This is why we have this amount of undersea”.

As with many things in this debate, there is no getting away from the complexity of a fast transition to a completely different energy system. We will be more respectful to communities by giving them lots of information. We have suggested community benefits to those who host new infrastructure in their communities. That will not satisfy everybody, but it can be a generous and helpful way of saying, “Yes, there is infrastructure coming through, but there is local benefit as well, particularly in terms of early decarbonisation in your area”.

Q387 **Mark Garnier:** On that point of local benefits, if you go back to the last Prime Minister, her Secretary of State for Business was talking about incentivising communities to live near fracking. There would be some compensation to the local community, be that a reduction in council tax or something else. Is this argument relevant to the energy sector in general? We could give some financial compensation to communities that are affected by pylons, a local power station or a wind farm. Is that something that could be done?

Nick Winser: Yes, it could. Many other countries do it. There is no need for us to be shy about it in any sense. It seems to me a very sensible trade-off to say, “The national goals to meet net zero and to have cheap, domestic energy mean the best thing to do is to bring an asset through here, but we understand that there is a downside to the community so the upside is that there is a pot of money to spend on accelerating decarbonisation to compensate people who have particular households that are close to infrastructure”. That seems to be a very sensible thing to do.

I would also say that we are talking about a lot of money here. The difference between a kilometre of overhead line and a kilometre underground is quite significant.

Q388 **Mark Garnier:** On that basis, you are suggesting that there is quite a lot of money to spend on incentivisation. I was just very interested in the fact that you picked up on decarbonisation. As I understood it—put me



HOUSE OF COMMONS

right, if I have got this wrong—you are essentially saying that, if there is a terrace of houses where they have not put in insulation and they do not have heat pumps and all of this stuff, that money could pay for that. If the houses on the other side were slightly more affluent middle-class houses that had already done that, they would not get a benefit from that.

Is that what you were alluding to? I am trying to highlight the problem where some people might benefit and some people would not, if you were to go down that specific route.

Nick Winser: That is a great question, which I had not really thought through. Nick may have something to say on this.

We have two things. We have an individual compensation pot for people who have households close to infrastructure and then we have a community benefit pot for communities that are close by. We have said that the community pot would ideally be under local governance. To take your example, it does not sound that bad to me that people should benefit in that way, but I understand the point.

Nick Geddes: It is about retaining the flexibility for that community benefit. Those are the two recommendations: direct payments to households near transmission lines and then a community benefit element. The Government have also said that retaining flexibility of how that is spent is key. In your example, I presume that community could determine how best that money is spent, whatever it is going to be on.

Q389 **Mark Garnier:** If we want an example of this, we could go back to the Shetland Islands, where a huge amount of money has been put into the local community by way of compensation by the oil and gas industry, which has been used to develop community halls, schools and that kind of stuff. I am not too sure whether it has gone to individual members of the community rather than the whole community. Is that what you are envisaging?

Nick Geddes: We have said that there should be a combination of both: direct payments and a community benefit. That is the piece where you have flexibility about how that is done.

Q390 **Mark Garnier:** Would it be the local council that would do that?

Nick Winser: We have not said. It would certainly be involved. One of the things that the catapult is very passionate about is local area energy planning. It could become part of that, which would clearly involve local administrations. That would be a great example.

I did just want to comment on the idea of money being spent on village halls and so on. I am sure that has been very welcome, but there is a much bigger prize. I passionately believe that the energy system that we are going to get to is going to be domestic, cheaper and cleaner. There is a very tangible thing for communities to get those benefits earlier than



they would have done otherwise. It can be a very exciting thing for communities to feel like they are in the vanguard on this stuff.

Q391 Mark Garnier: My last question is on exactly that. You can have microgeneration. For example, I live near the River Severn; it runs right through my patch. Potentially, you could put a weir in there or somehow divert the river and have hydro generation. A small community could have a wind farm.

In the event of that type of microgeneration, is the answer to have the community somehow invested into it as shareholders, potentially? They would then get a benefit directly from the income that comes from it. Is that just one of many ways of skinning the same cat?

Nick Winser: That is one of many ways, but it is a very good way. This is something that you see in some community energy projects, such as putting PV on schools and so on. I know, because I am involved in one, that a very good way of doing that is to take donations to buy a shareholding in the energy asset.

There are a number of examples starting to emerge. There are a number of adverts that you will see on the tube for that sort of thing, where you invest in and get the benefits of renewable energy. That would be a good thing to look at, in my view.

Chair: Finally we have Dr Dan Poulter, who is incidentally on the supplementary list as well. Dr Poulter, you are free to ask your supplementary or your core question.

Q392 Dr Poulter: I will go with the supplementary first because it picks up on where we were a moment or two ago.

Mr Winser, you mentioned the 2008 planning legislation and the importance of the pre-consultation phase being carried out efficiently and effectively. In your experience, having looked at major energy infrastructure projects, be it in terms of energy transmission or otherwise, are those proposing to carry out these major projects putting forward the right quality of pre-consultation material?

Nick Winser: They have been hobbled by the lack of up-to-date NPSs, which has now been rectified, by a lack of strategic planning that the public and developers can look at, and by a lack of design principles. We are going to give them all of that, which will help.

The report does have some tougher language about the regulation of those companies. It is my view that the incentivisation to hit timescales that they are subject to under Ofgem's rules should include getting through the planning process in an efficient and effective way. Ofgem is thinking about the future of regulation, as you know, but up to now it has been saying, "Yes, we understand that you are responsible for the timescale to build it, but planning is terribly difficult, isn't it?"



HOUSE OF COMMONS

I would put it that way. They are not incentivised on that. They should be incentivised on the whole timescale, because they have a lot of control over that.

Q393 Dr Poulter: You have not actually answered my question. From your experience of tangible examples of turning high-level principles into practicalities when these things are put forward—the current Norwich to Tilbury proposals, for example—is the quality of pre-consultation and the evidence put before communities, by National Grid in this case, adequate?

Nick Winser: I cannot answer that because I have not looked at that evidence. The report is looking at the overall system. I have not got into the individual cases. It is well appreciated across the industry that, with this supporting structure, it will be easier to make a good case to affected individuals and communities.

Q394 Dr Poulter: What we are getting at is that your report is talking about principles rather than practicalities. You have made these proposals in your report, but you have not looked at live examples of where these things are playing out.

Nick Winser: We have not done a forensic analysis of what was put in front of a community in that way.

Q395 Dr Poulter: Hold on. Why? You are putting this report together. I come from an evidence-based and scientific background. You need to look at the practicalities of the proposals and not just put forward high principles. This is why often reports of the type that you put forward lack practical application. I wonder why you didn't do that.

Nick Winser: There are many schemes out there at the moment in development and in front of communities—

Dr Poulter: Did you reference any in your report?

Nick Winser: I don't think we did reference any directly, but—

Dr Poulter: That is fine. Mr Winser, thank you. That is all I wanted to know. You did not reference any schemes in your report at all. That confirms to me the point about the difference between practicality and high-level theory. This is high-level theory. The practicality of some of this is what I was trying to get at.

Chair: Was that a question?

Dr Poulter: No, I just wanted to say that. They have made my point for me. I appreciate clear answers, and a no is a very good answer.

Nick Winser: I would like to respond, if I may, Chair.

Chair: Briefly, yes.



Nick Winser: This is a report about the overall process. We carried out very extensive stakeholder meetings and consultations with expert groups and talked to all the TOs about their experience in the field. We talked to many stakeholder groups. We did an awful lot of work on it. We got excellent comment on how to improve the process.

I do not for a second believe that going through the individual applications that have been put in up to now would have helped to inform the report. In fact, that probably would have weakened it. We needed to comment on how to make the process work.

Q396 **Dr Poulter:** I do not understand that. If you want to improve the process—you made some high-level sweeping comments earlier about the application of a 2008 piece of legislation—why would you not look at examples of where that has been applied in practice and apply that to the principles that you are setting out? Surely it is good practice, when you are bringing forward an evidence-based report and making proposals for the future, to look at things that have happened on the ground and applications of the principles that you are talking about. I do not understand.

Nick Winser: We absolutely did do that. We held very extensive stakeholder consultations with all parties involved, which took many days and weeks. We talked to people about how the process works. We have laid out in detail in here how the overall process works. We got extensive feedback. We tested our recommendations on all the players that were on our stakeholder groups.

I absolutely stand by this being an excellent set of suggestions that will halve the development time of strategic transmission. I do not believe for a second that it is weakened by us not going through probably 50 detailed applications. That was not the report.

Chair: It seems to me that there is a genuine difference of opinion on the approach.

Q397 **Dr Poulter:** Coming from the background I do, which is one that is based on putting in place evidence, I find it extraordinary, frankly, that you would not have looked at some of the practical applications that have gone through when making high-level sweeping comments to this Committee. I will move on to my next question, but I find that extraordinary.

The next question is about the general global supply chain. This is a more high-level and principled issue. What are your views about the proposed introduction of competition to onshore transmission infrastructure? Should the Government and Ofgem abandon these plans?

Nick Winser: The report is very clear on this. We have said that contestability is still a valuable tool in all of this, but that needs to be balanced in each case and over time against the very significant supply



chain stresses that are evident, particularly on high-voltage cables and DC equipment.

We have said that the developers need to form, as other countries are, very long-term relationships with the supply chain. Contestability sits uncomfortably with that because you delay knowing who is going to develop the scheme. The report says we believe this should remain on the table as an option, but in the short term we need to be realistic about the fact that it is an uncomfortable fit with the supply chain strains.

Nick Geddes: It is fair to say we are swimming against the tide a little bit in terms of trying to bring this process down from 14 to seven years. Global supply chains are going in the opposite direction. Having competition is a good thing in principle. From where we are in terms of the context in which we are operating, it probably does not feel like the right time to apply that. You have to apply that possibly on a case-by-case basis.

That was the view that we came to. It is quite challenging to get to seven years. If you have some of those elements as well, you might make it a little bit more difficult. We have to recognise the context in which we are operating.

Q398 **Chair:** Finally, on the supply chains and the pipeline, we have had evidence to the Committee that the UK does not give strong enough and sufficiently consistent signals for global supply chains and manufacturing capabilities to be set up here. Do you want to make any general comments on that?

Nick Winser: On supply chain, we lack—you will expect me to say this at this point—the strategic spatial energy plan, which would tell the supply chain as well as the industry about the order books that are likely to be available in the future.

Q399 **Chair:** Would that help with investment in the UK?

Nick Winser: I think so. If the supply chain had real visibility of the order books via an SSEP-type activity, it would likely encourage manufacturing facilities to be brought into the UK. Even without that, the visibility that will come from the process has to be accompanied by long-term relationships between somebody and the supply chain. The only natural place to look for that is the transmission owners.

Nick Geddes: When it comes to supply chains, one of the central points or challenges is about giving TOs that ability to engage with the supply chain early and take that off the critical path. A lot of the recommendations are trying to enable that by taking regulatory approvals off the critical timeline and building those long-term partnerships.

The point about the context of the global supply chain is really important to this. A central theme in being able to get to seven years is to be able



HOUSE OF COMMONS

to give certainty to TOs to engage with the supply chain and book those factory slots on long-lead-time assets. That is definitely going in the opposite direction. There is international competition for access to these kinds of assets. That is really one of the most important things and one of the key areas where we could save time through this process.

Nick Winser: Can I just add a point on skills? I know we are at the end of the time. This might be a bit gratuitous, but we have not really talked about skills. Skills is critical in this. We have to have a more strategic approach to engineering skills. This is a major constraint alongside the supply chain stresses. Engineering institutions have been reporting on this for decades.

There have been all sorts of initiatives from the industry to try to do something on this. We have run out of time on that. Government, working with industry, need to do a strategic plan on engineering skills for this energy transition. It is an enormous issue. Forgive me, but I just wanted to make sure it was before the Committee.

Chair: No, it is a point well made. I heard privately today that in the heat pumps area, if that is the best way of putting it, a lot of the cost of putting boreholes in is to do with the lack of skills. We only have about 70 teams in England doing it rather than about 250 teams. There are all these costs to do with moving people about and putting people in hotels. If you have more skilled people, it becomes cheaper to do. There may be various ways to do it, but the number of them is having an effect on the move towards net zero. It is a point well made indeed.

Thank you both for coming along this afternoon. There were many useful points raised, as well as challenges made. It is always useful when that happens. Thank you, Nick Winser and Nick Geddes, for being here this afternoon. It is greatly appreciated.