HOUSE OF COMMONS

Welsh Affairs Committee

Oral evidence: Grid capacity in Wales, HC 1092

Wednesday 27 April 2022

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Watch the meeting

Members present: Stephen Crabb (Chair); Simon Baynes; Beth Winter.

Questions 43 - 70

Witnesses

I: Peter Bingham, Chief Engineer, Ofgem; Julian Leslie, Head of Networks, National Grid ESO; and Huub den Rooijen, Managing Director, Marine, The Crown Estate.

II: Malcolm Bebbington, Head of Future Systems Strategy, SP Energy Networks, Scottish Power; Ben Godfrey, Distribution System Operator Manager, Western Power Distribution; and Roisin Quinn, Director of Customer Connections, National Grid NGET.

Written evidence from witnesses:

– Huub den Rooijen, Managing Director, Marine, The Crown Estate

– Malcolm Bebbington, Head of Future Systems Strategy, SP Energy Networks, Scottish Power

– Roisin Quinn, Director of Customer Connections, National Grid NGET

Examination of witnesses

Witnesses: Peter Bingham, Julian Leslie and Huub den Rooijen.

Q43 **Chair:** Good morning. Welcome to Committee Room 5 in the House of Commons for this session of the Welsh Affairs Committee, where we are continuing our inquiry into grid capacity in Wales. We are delighted to be joined this morning by two panels of expert witnesses. On panel 1 in front of us we have Peter Bingham, the Chief Engineer of Ofgem, Julian Leslie, Head of Networks at National Grid ESO, and Huub den Rooijen, Managing Director, Marine, at The Crown Estate. We are very grateful for your time and your input this morning.

I will start with a fairly general question. The reason that we, as a Committee, chose to look in a bit more detail at grid capacity in Wales is that this was flagged up with us last year when we were looking at renewable energy in Wales. This was flagged up as a particular challenge or constraint. I will start by asking the panel to give us a sense of your assessment of how significant a problem or a challenge this is in realising our aspirations for net zero and investment in energy infrastructure for the future. I will put that question first to Julian Leslie. Help us understand the nature of the problem.

Julian Leslie: Good morning, everybody. It is a very good question. I think that Wales has done such a great job so far in that there are 1,000 megawatts of renewables going into the transmission system and roughly 2,000 megawatts of renewables going into the distribution system already. When you look at the forward plans for connection contracts—where people have come forward, they have signed an agreement, and they have a connection date and works associated with it—by 2030 that gets you into the region of 14,000 megawatts. The Welsh demand at the moment is about 1,500 megawatts peak through the year. We expect that to rise as we go out towards 2030 to around 2,000 megawatts. There is a lot of interest in Wales and a lot of connections have already been made to renewable generation. As I say, it is around 13,000 megawatts against the peak demand of around 2,000 megawatts.

The challenge is of course that not all of that 13 gigawatts will come forward. They will get planning issues, they will not get a financial close, and therefore we need to create more capacity for newer projects coming in, with new ambitions around offshore and so on, to create that additional capacity. There are various ways in which we can do that. We can look at queue management and allowing people to remove themselves from the queue, which creates capacity for new people to come in. Also, there are our tried and tested processes through the future energy scenarios, the Electricity Ten Year Statement, which then lead to the network opportunity assessment, which leads then to the triggers for the network investment as required to meet the requirements of the grid.

Q44 **Chair:** Peter Bingham, is the problem one essentially of market failure, an economic co-ordination issue, or a regulatory failure? Help us

understand the challenge of grid capacity from your perspective.

Peter Bingham: From my perspective, in south Wales there are three main transmission system arteries that run from east to west. There used to be quite a lot of traditional generation capacity along that corridor at Aberthaw, at Baglan, at Barry and at Uskmouth. From my perspective, those closures have potentially released a lot of grid capacity in that area, but to Julian's point, there is a long queue of developers wanting to connect, and if we build offshore in the Celtic Sea area that will need reinforcing.

It is a little bit chicken and egg, in that developers come along and they seek a connection. The obligation then sits on the transmission and distribution companies to design their networks and reinforce their networks to accommodate that, but that takes time. Planning consents in particular take time for new overhead line developments, and that may dissuade developers if it will take a long time to connect. We need to get to a more strategic plan for the networks going out to 2050, looking at what the art of the possible is and where the potential for these low carbon technologies for renewable generation is, and start planning the network and building ahead of the need. That is where we all want to get to ultimately.

Q45 **Chair:** Mr den Rooijen, how much of a drag or potential obstacle is the question of grid capacity to all these exciting and interesting renewable projects that keep getting discussed? Obviously you are interested in the marine sector.

Huub den Rooijen: I would describe this as a huge opportunity. The way the Crown Estate looks at it is that in the south-west region of Wales there is massive renewable energy potential. It resides offshore, which is the domain where we are entrusted to manage it. It equally resides onshore. We see that, with the acceleration towards a more secure domestic energy system, the imperative of net zero and the imperative of dealing with the biodiversity crisis, the market interest and the political interest in unlocking these renewable energy resources has just rocketed up the agenda.

With that, I also think that what got us here in the past and systems that have worked for us very well will need to be reviewed going forward. As an example, we have stated that we would like to see 4 gigawatts of floating wind coming forward in the Celtic Sea area, which we are working with National Grid ESO—with Julian and his team—to make sure that the necessary grid capacity is available. At the same time, we recognise that there is more potential and that if we really want to decarbonise our economy we need to do more.

The question of how grid factors into this becomes a question of how we make sure that we develop the transmission capacity such that it is available at the right time and at the right cost. That is not a straightforward question, but it provides us with an opportunity to rethink

the energy system and make sure that we can deliver for net zero but also for the biodiversity challenge. All this infrastructure will have an impact on the natural environment and we need to make sure that we maintain the right balance.

Q46 **Chair:** I will come back to the language that Peter used a moment ago—the chicken and egg scenario. Huub, you were talking about some rocketing interest in marine renewables and floating offshore wind. If there is all this industry and market interest, does that not answer the question of chicken and egg?

Huub den Rooijen: I think, yes, up to a point. We maybe need to appreciate that floating offshore wind—which is what we are talking about in the Celtic Sea area and is a massive opportunity in many ways for the country—is still a very nascent technology, so we also need to ensure that we create a fast way for those technologies to establish themselves within supply chains so that we will also be creating the industrial capability, the green jobs and the social vibrancy that everyone aspires to. Therefore, it is not as simple as saying, "Let's just go out gung-ho and do it all". There is a question about how we set the right balance between creating the industrial capability, making sure that our industries can shape their capabilities in a competitive market and phasing that with the development of grid.

Having said all of those cautionary words, I believe that the development and the acceleration of transmission capacity is a prerequisite, and we very much hope to work with Peter and with Julian to make sure that we can resolve this ornithological problem.

Q47 **Chair:** Thank you. Mr Leslie, in your view how can the chicken and egg situation whereby development is hindered by high up-front grid reinforcement costs be resolved? What is the solution in your mind?

Julian Leslie: When you apply for a connection, you have to secure the risk that the consumer is taking, and that is where the costs come in. Once you connect, you are part of a socialised network system of charges. It is about that initial up-front connection cost. In the early days, when the projects are still nascent and they are just going through planning, the transmission owners are in the same position as well, so the security for that particular stage in the process is pretty low. As the developers get more certainty, that is when the transmission owners get more certainty and start investing more, and that is when their security obligation starts to rise.

At the heart of all this, though, there is the consumer and our role as the system operator, along with the other licensees and transmission owners supported by the regulator, is to ensure it is delivering best value for consumers. The key to unlocking all of this chicken and egg is clear policy, and we have the Great British energy strategy now, which gives us our clear ambition. That sets the guardrails and allows us to create the

future energy scenarios that meet the Government policies, not only across GB, but with the devolved policies.

That future energy scenario feeds into our network design and our network planning processes, and we work very closely with the transmission owners and all the other stakeholders to ensure that the developments are delivered on time. With the pace of change we are seeing right now, it takes 10 to 12 years to build a transmission line, from the concept to planning consent and then to build and construction. Any time we can take out of that process means that you can bring the commissioning date a little bit earlier, where everybody can get behind that certainty and move forward.

Q48 **Chair:** Is Wales in a more challenged position than other parts of the UK with respect to grid capacity? When we are talking about this, we talk about it in fairly general terms, and I am sure that a lot of what we are saying could apply to other parts of the country, but is there a particular or a special problem with the Welsh systems?

Julian Leslie: I think that in north and south Wales it is not different from any other part of the network. It is an existing network, as Peter said, that was designed for the collection of coal and gas via power plants, and that has been repurposed now and is collecting a huge amount of renewable generation, as I said at the beginning. There are low density populated areas of Wales—mid Wales, for example—where there are not the transmission assets, but that would only be developed if there was a clear pipeline of onshore wind development. For offshore wind in the north and south of Wales, there is grid capacity there today and there will continue to be the grid capacity. As and when we get those clear signals as to the technology development and those opportunities, that will trigger the reinnforcements through our processes.

As Huub said, we are trying to look much more to the future. We are creating this blueprint so that we can start with the transmission owners to do some desktop development work earlier than we would have otherwise by having this anticipatory investment approach—by getting a one, two, three-year head start on the process before the real certainty comes. It is low-regret spend, because it is pretty much desktop, with a bit of environmental assessment. It enables us, when we get clarity as to what is coming and when it is coming, to make the best case for the consumer and give the signals for the assets to be built.

Q49 **Chair:** We will come on to anticipatory investment, I am sure, in a few moments. Mr Bingham, to round off this section of questions, could you give us a perspective on the Welsh scenario and whether there are any particular challenges that you are aware of for Welsh grid capacity?

Peter Bingham: I talked about south Wales. Two transmission arteries run across north Wales. My understanding is that that capacity is well used. I suspect that development offshore of Anglesey with Round 4, for example, will precipitate more investment, and National Grid has plans to

do just that. The network in mid Wales is built to serve local demand. It is a distribution network. If we are to exploit the potential for renewables in mid Wales, that network would very much need reinforcing.

The role of the networks is effectively to enable the connection of new generation and demand to their networks. Our obligation, as regulator, is to ensure that the network companies can fund their activities. To the extent that network needs to be built, we have what we call a price control mechanism that will enable pre-construction funding to get to the planning consent stage and then for the actual construction of the transmission assets. We see our role as a key enabler to enabling the net zero future and the reinforcement of networks that will be required to get us there.

Chair: Thank you very much.

Q50 **Simon Baynes:** Just picking up on that point, the next area we wanted to look at was rural connections, specifically in areas such as mid Wales, and how the grid infrastructure can be constructed without unduly burdening local communities and developers. It is of considerable concern to people, particularly the effect on the landscape. Mr Bingham, could you answer that first?

Peter Bingham: We would expect the network companies to have due regard for the environment, to engage with local communities and stakeholders in exploring the range of options and to use technology and innovation to its full extent to minimise the impact on local communities in coming forward with their plans to Ofgem for approval. If consent is to be granted for such development, developers and network companies need to take account of all of those factors to go through that process successfully.

Q51 **Simon Baynes:** I declare an interest in that I used to live in Powys. I don't any longer. I represent Clwyd South, which is just further north but I was a Powys county councillor and so on. To what extent is this discussion—and we can move on from mid Wales; we don't want to be completely fixated on that—based on the idea that if you have onshore wind that would, therefore, mean that you need more grid infrastructure? If you did not have additional onshore wind capacity in mid Wales or other rural areas, presumably this question is not particularly relevant, or is it needed anyway?

Peter Bingham: First, we have to remember that decarbonisation of heat and transport applies across all of our countries, and electricity demand in mid Wales will grow to enable that. Networks will need to be reinforced. To what extent and what it involves is for the network companies to answer. To the extent that there is huge potential for wind, solar and other renewables in that area, to enable that either requires network investment or local consumption of that energy through industry—the hydrogen economy producing hydrogen for heating, for example. If you have local demand for that energy you can reduce the

amount of network that you need, but ultimately investing in large amounts of renewable generation in mid Wales will require network investment to bring that to consumers.

Julian Leslie: If there is no generation, you do not need the infrastructure to connect it. The demand in mid Wales is 80 megawatts currently. There is 300 megawatts of renewable generation already in mid Wales supporting that 80 megawatts. As Peter said, if you are going to get a gigawatt—1,000 megawatts—of wind generation just in one site, that swamps the local demand, so you need to build export capability out of the region or you build 1,000 megawatts of demand in a data centre, through Amazon or Google or whoever, and you do that whole energy sector—that whole decarbonisation. That applies not only to mid Wales, but to north and south Wales as well. If we look at this whole energy sector, and we start to decarbonise the demand on the system and to attract new industries, new investments and the hydrogen economy, you start to consume the generation where it is created and therefore you don't need the export capability back into England and Scotland.

Q52 **Simon Baynes:** How can you in practice construct without unduly burdening local communities? I am a veteran of the various discussions that took place about pylons and so on, but to put the lines underground is expensive.

Peter Bingham: It is expensive and hugely disruptive. Generally a transmission network company or distribution network company will look to minimise the impact in areas of outstanding beauty, for example, to try to mitigate the impact on the environment. From my knowledge of transmission, undergrounding a transmission line requires the excavation of a tract of land the width of a dual carriageway. It needs to go at least a metre deep to avoid the ploughs of the farmers. It will go through hedgerows, trees, communities and roads. That in itself is hugely disruptive and very expensive. I think it is about 15 times as much as building an overhead line and ultimately those costs are borne by consumers. Our job is to protect the interests of consumers now and in the future. It is about getting the balance right in cost and disruption to visual amenity.

Simon Baynes: Mr den Rooijen, do you have anything to add on that?

Huub den Rooijen: No, I don't think so. The gentlemen to my right are the experts in rural connections.

Q53 **Simon Baynes:** It was just a matter of courtesy. I will move on to the second question. What are the barriers and opportunities associated with anticipatory investment in grid infrastructure in Wales? Would you like to comment on that?

Huub den Rooijen: Yes, please. I think the key question that we want to have answered is: what is the right level of anticipatory investment? It is clear that the development of grid takes a very long time and the

onshore components of the gridwork therefore will take a long time to deliver. Ensuring that those activities—route planning, community consultation and so on—can commence at an early stage will help accelerate the delivery timescales for offshore assets.

The second point is that the system to date basically means that offshore transmission connections get done by the generators who develop. They are done individually, project by project. One of the experiences from the east of England has been that a more co-ordinated approach is effective in getting community support for ultimately less uses for construction installation works, but also that there is a real cost advantage if transmission infrastructure can be combined. I note that BEIS has put out a position only 48 hours ago where it recognises the importance of the multipurpose connections.

This is part of the OTNR, the Offshore Transmission Network Review, and we welcome the work that is being done in that arena, because combining infrastructure and enabling the market to invest in anticipation of—let me give a very simple example. If there are two wind farm developers working independently in a competitive environment and developer A wants to go early and is ready to make an investment, but developer B is not, how great would it be if developer A could take the risk of developing some of the network connection of developer B, so that the whole thing is maybe sized at twice the size of what it needs to be and developer A can recover its cost? That is anticipatory investment, which derisks and accelerates the delivery of project B and reduces community nuisance. These discussions that take place as part of the Offshore Transmission Network Review are important in accelerating and reducing community nuisance.

Peter Bingham: We published a consultation only a couple of weeks ago on this very subject of anticipatory investment offshore, and rather than individual projects connecting point to point individually, the OTNR project coming up with a holistic plan for a strategic network design, and the potential for developers to overbuild. Currently there is a risk there that assets will be stranded. The proposal we put out is that the additional capacity would be underwritten by consumers and then provide the opportunity for a later generator to connect to that.

On anticipatory investment, traditionally as a regulator we have been a little reticent to allow investment where there is not a clear need for connection of generation, particularly to speculative developments. Our stance has changed and continues to change towards being much more supportive of anticipatory investment. A great example is the transmission link that has been approved to the Shetland Islands. Before, there was a large amount of wind generation signed up to CfDs. We authorised the transmission companies to get on with that before that need had absolutely crystallised. I think we want to take that philosophy forward with other areas, particularly the offshore developments that we will see in other parts of the country.

Julian Leslie: We are doing everything that my colleagues have said already. The Offshore Transmission Network Review is a great starting point for a co-ordinated design for the network. For the last 12 months we have been working with the regulator and the industry to look at the Electricity Transmission Network Planning Reform. This is looking at what the process is, understanding the likely requirements in 2050 using the future energy scenarios, as I said earlier, and then building out as blueprints. We can consult and say, "This is one solution for 2050, but if you build hydrogen here, long-duration storage there or a nuclear plant comes here, this is how it changes." If you have a 10 to 15-year lead time on a competitively allocated transmission owner, you know 15 years in advance when that trigger needs to be pulled and when you can start doing the development work.

We are doing the first transitional central strategic network plan, and that is part of the holistic network design we will publish in June this year. We have a second transitional plan that we will be publishing in the first quarter of next year, which brings in the second piece of Celtic Array offshore wind but also Scotland. From 2024 onwards, we will have an annual process where we are looking and refining this blueprint out to 2050 and cooling off on those decisions as we need to on the way. The regulator is hugely supportive of that, as Peter has just said, in its anticipatory approach, and that is the process and mechanism by which we will start to get on the front foot with this and give that longer-term view as to where we are heading.

Simon Baynes: Thank you very much.

Q54 **Chair:** We are going to have to pick up the pace a little bit. The message I am hearing from you this morning is that for all of these challenges and opportunities that we are talking about, potential solutions are emerging, and Peter Bingham mentioned the consultation that you have launched on anticipatory investment. There is a process in place for looking at it, which is all very positive sounding. If that is the case, why does a company like RWE, which owns a major site in Pembrokeshire and wants to connect a 400-megawatt offshore wind farm in the Celtic Sea, get told, "Sorry, you can't because the grid is full"?

Julian Leslie: This comes back to a similar challenge with the 13 gigawatts that you have in the queue in Wales, which is that not all of it will come to fruition. The current rules for planning a network are that you assume some, if not all of that contracted position will be there, because we have commercial contracts with those developers to connect. If you have that 13 gigawatts in the background, the 500 megawatts or whatever it is that RWE is looking to add is in addition to that. Therefore, the capacity of the network between Pembroke and the main network in England is already full of these nascent projects, which may or may not come to fruition.

We are doing a piece of work to look at how we change the planning standards so that we can start discounting some of these projects that

have a contract. There is a commercial contract and there is money and commitment behind it but we need, as a system operator, to say, "We have not seen progress for two years on this project, therefore we will not assume it is ever going to happen". We need to assume that some of your pipeline of 13 gigawatts of renewables is not going to happen, because if it all happens we will more than decarbonise not only Wales, but the rest of the UK.

Q55 **Chair:** Presumably if RWE cannot get a connection to the Welsh grid from an offshore wind farm in the Celtic Sea and they get told they have to go to Devon instead, there is no hope for any of these other offshore projects getting on to the Welsh grid.

Julian Leslie: No, there is hope because, as I say, the work we are doing is—the reason it is going to Devon is because that is the quickest and least cost connection for the consumer. There is capacity. We are working with the system operator. It is one integrated electricity network. When the application comes forward, it is our licensed obligation, supported by the regulator, to find the least cost solution for the consumer. For this particular example, going to north Devon is the least cost and it meets the time commitments that RWE is looking for.

As we move forward, there are some short-term fixes we need to do, which is looking at the 13 gigawatts in the queue and clearing out some of the stuff that we know is not going to happen because it has had planning consent refused three times already, but yet it still has that contract. We will then say that by the end of this year, whenever that process is done, anybody remaining in the queue has new obligations on them where they have to clearly demonstrate progress annually or over 18 months. The minute they don't show progress, they are out of the queue and somebody else can come in.

Working from today going forward, as we have just talked about, the ETNPR—the planning reform—is looking to the future and coming the other way. By bringing these two pieces of work together in the next 18 months to two years, we will then start to see for clarity where there is the capacity and what essential network reinforcements are required to 2035 and beyond.

Chair: Okay, thank you very much.

Q56 **Beth Winter:** Thank you for coming along in person today. Building on what the Chair has just said, there are responsibilities and developments probably that both the UK and Welsh Governments could be doing to assist the process. I want to focus on this in particular. The first one relates to the British Energy Security Strategy. Should it have included proactive investment in the grid alongside its proposals for reducing the processing time for offshore wind?

Julian Leslie: We very much welcomed the energy strategy that was published just the other week. It starts to break the chicken and egg

cycle, because we get a much clearer view of the overall ambition that Government are setting and what are the volumes and quantities of the various technologies they are looking to promote. It talks there about anticipatory investment. It says that that is a lever that we should be pulling, as well as looking at the planning consenting process. If you can work on the planning consenting process and reduce the time, you are therefore reducing the overall time delivery of the transmission. It becomes less anticipatory, because now the time that it takes to build new transmission infrastructure aligns with the time it takes for Huub and his colleagues to build an offshore wind farm.

The problem at the moment is that the transmission infrastructure takes much longer to build than an onshore or offshore wind farm. It is trying to break that cycle so that you can do the anticipatory investment. If you have an inkling that the need will be there and you can take two or three years out of that process, you can rely on the two delivery timescales and make it happen.

Huub den Rooijen: We also very much welcome the energy security strategy, because it provides a real sense of urgency. On the anticipatory investment, we believe that if we build the transmission capacity, the market interest will be there. We see unprecedented interest from investors and developers for offshore wind. We believe that the principal challenge is not whether they will come; the question is: how will they come and will they come in the right way? By that I mean it is not just about developing wind farms. It is also about maintaining a real balance in a very busy marine environment, which is of critical importance to sectors like the fishing industry. We need to consider that as well, and we do a lot of work, as the Crown Estate, engaging with all the sectors that have a vested interest in the marine space and the natural environment.

All of those factors need to be considered, but once we have cracked the conundrum of how we bring these capacities forward, accelerating and investing in the infrastructure is one of the fastest ways of bringing forward low carbon electricity into consumers' homes.

Q57 **Beth Winter:** Thank you. Mr Bingham, the national policy review was announced quite a while ago. What is your assessment of that review and what changes do you think should happen?

Peter Bingham: We certainly welcomed that review, particularly PN5, which is all about grid infrastructure and helping accelerate the consenting process by giving better guidance to network companies to plan developments. That ultimately is the thing that takes the longest. We have all heard Boris talk about it. It takes 10 years to get the planning consents for a wind turbine and it takes a day to put it up. It is not too dissimilar with transmission lines and anything that helps bring that forward, absolutely. It also leans towards the holistic planning of the whole network that Julian talked about and having that long-term strategic plan that we can use to engage communities in building the infrastructure that we desperately need to connect all these renewables.

Beth Winter: Do either of the other parties have anything to add about the policy review—anything that you would like to see, any changes?

Julian Leslie: No, not really.

Q58 **Beth Winter:** My final question relates to your relationship with the UK and Welsh Governments in ensuring that the grid requirements of Wales are met. Wales has very ambitious targets for climate and for a ministry of climate change—the first in the UK. I would like to explore your relationship with the two Governments in collaborative working and any developments that you think need to happen.

Huub den Rooijen: We work very closely with the Welsh Government, and that is a very happy working relationship, from our perspective. We have contributed to the renewable energy deep dive of Minister Lee Waters. We work with a range of officials and we know, for example, that the Welsh Government are also looking at transmission solutions required for the low carbon agenda in Wales. The work that we do in the Celtic Sea is collaborative across the Welsh Government, as much as with the UK Government, to make sure that we can create the right conditions for the offshore wind developments, so as to strike a triple home run, in the sense that we want this to be low-cost generated capacities to keep costs down for consumers. It also needs to generate the social value and the green jobs to bring real lasting economic prosperity within Wales and the wider region in the south-west, and it needs to make sure that we deliver environmental net gain. We believe that that can be done, and our discussions with Welsh Government and UK Government are very much along those themes.

Q59 **Beth Winter:** Mr Bingham, I noticed that in the recommendations of the deep dive, the Welsh Government pledged to press Ofgem to create a Wales energy system architect. Are you familiar with that? Do you have any response on that?

Peter Bingham: I am very familiar with the recommendations and have had lots of discussions on this point with the Welsh Government. I would point and have pointed to the institutional arrangements for the creation of a future system operator and the work that Julian has talked about for a central strategic network plan. We feel that effectively we want the future system operator to be the architect for the whole of Britain as well as Wales. We think we are going in the same direction, albeit that we have not called it a system architect.

Julian Leslie: We work very closely with Welsh Government. Personally I have been involved with the strategic review of mid Wales for the last 18 months to two years. A system architect is what we do—that is our job. We have to make sure that the electricity system for GB is safe and secure and delivered with the least cost and in the most efficient way for consumers. In the last few weeks, we have had one of the new zero carbon devices, a first in the world, connecting in south Wales, which allows us to operate a zero carbon grid, but it is at zero carbon so it is

providing short circuit infeed and inertia on to the grid system. There is one in Scotland and there are two in Wales, because Deeside used its old CCGT plant and put a big production there, and again that is a zero megawatt service.

We are looking at the whole system and working very much with the distribution network operators as they transition to distribution system operators to make sure that this whole electricity system comes together. As Peter said, as we get the requirements to deliver against the future system operator, we can do that on an even more holistic basis where we are looking across methane gas, hydrogen, CCUS and a whole range of decarbonising the whole energy sector, whereas our remit today is focusing on the electricity sector. We are the electricity system architect; we make sure that it works.

We are the fastest decarbonising energy electricity network anywhere in the world, and we should be proud of the efforts we have made to date across all of GB, Wales included. The plan for another 13,000 megawatts of renewables by 2030 is a huge commitment and goes a long way to making sure that Wales is on the map and is facilitating that massive decarbonisation.

Chair: We have just about run out of time for this session with our first panel of witnesses. Thank you very much for your time and input and thank you for bearing with us as non-specialists in this issue and for making some of the technical issues understandable to us. That is very helpful, and we may need to write to you with further questions in due course. We will try to move as seamlessly as we can across to our second panel, who are joining us all virtually. We will suspend for two minutes.

Sitting suspended.

Examination of witnesses

Witnesses: Malcolm Bebbington, Ben Godfrey and Roisin Quinn.

[*This evidence was taken by video conference*]

Sitting suspended.

On resuming—

Q60 **Chair:** We will resume the session. Thank you to our second panel of expert witnesses. We are joined virtually by Malcolm Bebbington, Head of Future Systems Strategy at SP Energy Networks, Scottish Power; Ben Godfrey, who is DSO Manager for Western Power Distribution; and Roisin Quinn, Director of Customer Connections for National Grid NGET. Good morning to you all and thank you for giving us your time.

I will start off this section of the evidence session by asking you, Ms Quinn, about the decision, which I referred to with the first panel, to offer RWE a connection in North Devon instead of Pembroke when it sought a connection for a potential 400-megawatt offshore wind farm in the Celtic Sea. What were the factors that contributed to that decision?

Roisin Quinn: I might not be able to comment on all the details of any particular offer due to commercial sensitivity. The pieces that I would just draw out would be two first off. First, and I know this was mentioned in the earlier panel, is the queue to connect, and the volume of applications into South Wales is significant. There will be a number of projects under contract already in front of the next application we get, whoever that is from.

The second is a process point for offshore wind. When offshore wind looks to connect to the network, we within National Grid licensing transmission work with the system operator to identify the least cost connection point to consumers. That is called a queuing process, which is the Connection and Infrastructure Options Note Process. That determines what is the optimal place for them to connect. That means that a developer may not connect in the location that they requested.

This has effectively led to a lot of the co-ordination we are seeing on the east coast, and round the coast, for offshore wind that is captured as part of the OTNR. That will be captured in the holistic network design, which ESO will publish later this summer. In fact, it will be the cost for the generation in front of them and the impact on consumers and how quickly that connection will be able to be made.

Q61 **Chair:** Thank you very much. Can I ask the panel more generally for their perspectives on whether there is a real challenge or problem when it comes to Welsh grid capacity? We spent quite a bit of time talking about offshore wind and I know there are other renewable energy opportunities in Wales, but from your perspectives just very briefly do you feel there is a particular challenge when it comes to Welsh grid capacity? Could I ask Mr Bebbington to respond to that first, please?

Malcolm Bebbington: I will answer this from a distribution perspective for SP Energy Networks. We own and operate the electricity network in mid and North Wales. First of all, network infrastructure is normally proportionate to the customers in an area. Most of our Welsh distribution network is in North Wales because that is where we have relatively large numbers of domestic and business customers.

By comparison—and this was touched on before—and it is for historic reasons, mid Wales is more sparse and the network is designed for relatively low levels of rural demand. For larger generation, mid Wales is a particular challenge because, as we have heard, there is no transmission network and it is currently served predominantly by the distribution network—circuits from the north and circuits from the south.

We have 450,000 customers. We have 800 megawatts of demand and we have 1,200 megawatts of generation with a lot more in the pipeline, so Wales is already a net exporter. We have a lot of generation already connected.

If we look forward for a moment to our plans for the future, in ED2, which is from 2023 to 2028, we are planning to invest over £600 million in our Welsh network. This is going to enable over 160,000 low carbon technologies to connect, a further 1.5 gigawatts of distributed generation and a further 260 megawatts of demand. In addition to that, we have also included funding in those plans as well for our part of the engineering and consenting works for a wider solution for Wales. We are very much committed and continue to work with the Welsh Government and National Grid, DSO and WPD.

Chair: Thank you very much. Mr Godfrey, please.

Ben Godfrey: Good morning. With the network that we operate in South Wales—we cover 1.1 million homes and businesses—again it is a similar position. South Wales has significantly more generation connected already to the network compared to the demand that we serve.

In terms of our network, it is very much fit for purpose at the moment and has sufficient capacity to do everything that we need it to do, but we recognise that there is going to be a significant amount of change, particularly with demand-led technology such as electric vehicles and heat pumps as they are rolled out through the network. Therefore, we think there is a significant opportunity to ensure that we build out the relevant amount of capacity in the right areas.

As a network operator, I think we see that one of the key roles is making sure that we are engaging on a bottom-up level with local communities, to make sure that we understand what their requirements are and ensure that we have sufficient funding and plans in place to develop that capacity out.

Through the next price control period, we are going to be doubling the amount of investment that we are putting into South Wales to secure that capacity. We need to do that with regard to the nature of the demand generation that local communities are going to expect to happen in their area.

Q62 **Simon Baynes:** I want to talk about the cost of connection. Does the lack of transmission infrastructure in mid Wales mean that connection costs in this region will be greater than in the regions where there is existing grid infrastructure, and how can these prohibitive costs be overcome? I know we have sort of touched on it already, but just to expand on that subject. Mr Bebbington, if you could go first, please.

Malcolm Bebbington: When a customer connects to the network they make a contribution towards any work that is proportional to the impact

they would have on the network. Changes that Ofgem is proposing through the significant code review, if approved, would mean that onstream reinforcement works associated with the connection would be socialised and, as a result of that, the cost to developers would ultimately come down.

I am probably best placed to answer this from a distribution perspective. National Grid may want to comment about transmission.

Simon Baynes: Would Roisin Quinn like to comment on that?

Roisin Quinn: Absolutely. The TNUoS, which is the charge the transmission network users system charge, is set by ESO and the cost to connect in Wales is the lowest in the country. We would say that the volume of applications that we are getting to connect in South Wales would show that the initial connection costs are not in fact a barrier to entry. The key with them is how quickly we connect people, deal with the volume of connections and make sure that we are progressing those projects that are ready to take financial closed decisions, that have planning consent in place and that are able to move forward at pace.

Obviously everyone wants the most efficient connection cost they can have, which is what we are largely obliged to do and is regulated by Ofgem, but consumer behaviour and customer behaviour in our view is key to getting lead times down, which is what we hear is more of a barrier from developers than their initial cost to connect.

Ben Godfrey: On the distribution network, there is very much a locational price signal for where to site connections. That price signal is a lot stronger on the distribution network, but there are a couple of elements in play, which the regulator is leading on, making sizeable changes to the way that we apportion those charges to make them more fitting for this energy transition.

First off, there is a significant code review that has been a long time in the making, but we are expecting a decision to land imminently. That will be removing those charges for demand customers and reducing them for generation charges, so that will make connections achievable. It will also give more power to us as distribution networks to be able to appropriately regard a full pipeline of projects—similar to what happens on the transmission network—and ensure that that capacity is delivered, not just on a project by project basis, as it is done at the moment, but more on a strategic level.

Secondly, I think the opportunity and the warm words spoken earlier from Ofgem about strategic investment is one of the sorts of critical things that would support this transition. So, particularly within our ED2 business plan, we have put forward enabling engineering planning works to enable us to correctly articulate what needs to happen in the area, particularly around mid Wales, ensuring that we can then put forward a

lowest-cost solution for infrastructure that will deliver the energy system that Wales needs for the future.

Q63 **Simon Baynes:** Thank you very much. I want to move on to what is a closely interconnected question, in terms of onshore wind. How do you respond to calls from stakeholders for National Grid to proactively construct grid infrastructure in regions such as mid Wales, as we have been discussing, where there is a lack of infrastructure, in order to overcome disproportionately high connection costs for developers. We have touched on that as well, so maybe you could give an answer to that. Ms Quinn, could you start on that, please?

Roisin Quinn: Absolutely, yes. We are working closely with the Welsh Government and welcomed their strategic review and the work to evolve the energy grid for net zero. There is a significant interest in connecting to mid Wales from onshore wind and for other customers as well.

We are very conscious that there is an optimal solution that can be found if we think strategically and holistically. That may be a solution that is part transmission, part distribution, but it is very important that we think about it holistically rather than try to do point to point connections. That way we should be able to meet the need of those customers who wish to connect now, but also build the capacity to allow for future connections to happen at greater pace.

To do that as part of that strategic review, the ambition that we have with the Welsh Government is welcome. Could we translate that into specific targets for megawatts? Maybe for 2025, for 2030, for 2035. That would give real clarity to: is the ambition to connect the megawatts for use in Wales and to meet Welsh demand, or for export to the wider grid? Obviously, when you are exporting that would serve local communities first and the excess is exported.

That then gives us the clearer need to be able to engage local communities around why it has been built, because we are very mindful that the communities that will host this infrastructure need to understand it, need to feel part of it and the strength of feeling around that is obviously very front and centre to our minds.

Q64 **Simon Baynes:** What proportion of that activity falls under Welsh Government or UK Government responsibilities? It depends on the size of capacity, doesn't it?

Roisin Quinn: It will depend on the size of the capacity. The planning reforms that are going through are very welcome, but we are conscious that you need to have local support for it as well as the planning reforms. The work has been done to reform the planning statements that recognise HMD is very welcome. How you can reform that further to make sure that the strategic thinking in Wales is also recognised would be great, because we are conscious that the changes need to have the right emphasis on pace and the Government ambitions, both Welsh and

UK, to make sure we can construct this infrastructure to meet the pace to develop those ambitions, as well as Government ambitions.

Simon Baynes: Mr Godfrey, would you like to comment on this question?

Ben Godfrey: Yes. We recently submitted our business plan for the next price control period in December of last year. We are looking for Ofgem to regard that and see the criticality of some of the infrastructure that we are proposing in South Wales and make sure that it is supportive in terms of ensuring that networks are funded to be able to deliver that. I think it is really critical that, as well as concentrating on the generation provision, we make sure that the benefits of that generation flow down through the lower voltages and provide low carbon energy for the demand through transportation and heating that we are expecting to see on the network, and doing so in a holistic and joined up plan is very critical.

Simon Baynes: Thank you. Finally, Mr Bebbington.

Malcolm Bebbington: Yes, I will just mention here that there have been previous proposals for the mid Wales area that would have established larger-scale grid capacity. However, there have been consenting challenges associated with the connecting parties that have dated back since 2016, and for that reason, it has not moved forward.

We are very much committed to working with the Welsh Government and network partners to develop a strategic solution, as was mentioned before, and our proposals for ED2, so from 2023 to 2028, are very much aimed at maximising the use of the existing network in north and mid Wales through flexible and innovative solutions, as well as local reinforcements. As we look forward, particularly in mid Wales, for any significant onshore distributed or generation or as we look forward in terms of the demand forecast, there is going to be a need for a wider more strategic solution, and we are committed to work to progressing that.

Simon Baynes: Thank you all.

Q65 **Beth Winter:** Thank you for giving us your time this morning. If you listened to the previous panel, there was a lot of discussion about the importance of anticipatory investment, so I am interested to get your views on what information your organisation would need to enable that investment in grid infrastructure in Wales. I would like to ask Mr Godfrey first, please.

Ben Godfrey: We do extensive stakeholder engagement with various actors within the electricity system, particularly for the large increase in capacity that we are going to be seeing on the network. That will be very much driven by domestic customers through the electrification of transport and heating. For those kind of needs, the rollout trajectory is

fairly straightforward. We have lots of good data to support how we expect that load to grow.

The more difficult and challenging prospect of opening up capacity is related to renewables and where those renewables will be sited. We think that there is a challenge but also an opportunity to get together all elements of the supply chain, local authorities in terms of consenting some of those developments, and network operators in terms of accepting that capacity, and ensuring that we are working from a common blueprint to make sure that we are greenlighting the right opportunities in the area and that the capacity is forthcoming.

To break that kind of chicken and egg cycle, strategic investment leading from network infrastructure would be a very strong message to show that there is capacity and those developments can be made and brought forward to decarbonise South Wales.

Malcolm Bebbington: We see anticipatory investment as being an essential tool to enable net zero. It is just not going to be feasible to deliver the high volumes of interventions that are going to be needed, particularly in the lower voltage network to enable low carbon technology, in the timescales needed without anticipatory investment.

We were also encouraged—as was mentioned before—to see anticipatory investment being mandated in the recent UK Energy Security Strategy. As Peter touched on in the first session, we are also encouraged to see the focus on anticipatory investment as part of RIO ED2. We are optimistic that this is going to be appropriately reflected in the funding that is made available at determination. It is also important that the regulatory framework gives sufficient priority to net zero and entering greenhouse gas reduction targets and to enable the funding that is going to be required to deliver the necessary levels of anticipatory investment.

Beth Winter: Thank you, and finally, Ms Quinn.

Roisin Quinn: I echo the comments of my colleagues. I think the clear targets are right for anticipatory investment. We would agree that is necessary. I think collaboration to get to a holistic plan that reflects the needs of networks, that reflects the views of Government, both Welsh and UK, that reflects the ambition of developers and, crucially, that Ofgem and ESO support and FSO support will be vital.

I think the regulations underpinning that—we welcome the comments in the Energy Strategy around the role of Ofgem. In terms of tangible outputs, the HMD and the evolving energy grids for net zero, these will give us the blueprints. If these blueprints are then supported by Government, that will unlock the anticipatory investment, which means we can deliver the infrastructure and start to see those connection times come down.

Q66 **Beth Winter:** Thank you. My next question is about UK Government

policy, and I am interested to explore your assessment of the UK Government policy in relation to future-proofing the grid. I suppose a related question relates to the decision by the UK Government on Ofgem creating an independent future system operator in recent weeks. What role do you see that that should have in enabling profitable investment in Wales? Can I go to Ms Quinn first on that, please?

Roisin Quinn: We welcomed the decision around the future system operator. We will continue with National Grid to work closely with the Government and with Ofgem to establish that and what the roles are. We have been working closely with them for some time. We understand that they have a statutory duty to provide expert advice and analysis and, crucially, to answer some of the questions that perhaps have not been answered, such as how do you think about the role and the location of hydrogen? When we are thinking about the location of generation, how do you co-ordinate the demand being sited with it, so that you are building infrastructure that is required and will be used but that you are not over-investing?

We also expect them to have regard to competition, to facilitate innovation, to be conscious of the impact on consumers and to do that whole system thinking and support the networks in being able to make the trade-off between whether it should be a transmission solution or a distribution solution, or whether it should be something totally different. We welcome that role and that space with that future-focus thinking, so that we can be thinking around 2050 and what that requires, and 2040 and what the pathway is to get there. How do we take actions much earlier than perhaps we would have done without it?

Malcolm Bebbington: I think, broadly, stakeholders expect—just to add to what has been said—the FSO to play two roles. The first is to fulfil the existing role of the DSO, balancing the system and also providing a unified strategy for the central system, so informing system-level policy to balance net zero and security with cost.

There are a couple of other points. I think it is important that there is close co-ordination between the FSO and the DSOs to effectively manage the system. The DSO is going to have a really important role here in operating and planning the local distribution network and, at a distribution level, community relationships and really in-depth local network knowledge are critically important to safely operate the network. DSOs have millions of supplies into their customers' homes.

To give an example of this, moving forward, thinking to the future, the DSO is going to be issuing thousands of instructions each day, controlling the band at an individual street and property level, making that local community knowledge and relationship vital.

Q67 **Beth Winter:** Can I just dig a bit deeper in terms of your assessment of UK policy in terms of future-proofing the grid, and particularly in relation to the needs of Wales?

Malcolm Bebbington: In terms of Government policy, I think for us the Rio ED2 settlement—the business plan settlement—will be a key test as to whether the UK energy policy is sufficiently net zero-focused. We have included within our plans the investment needed to enable net zero. If sufficient funding is available, it is going to be a really clear indicator that the policy is on track to deliver net zero.

Beth Winter: Thank you, and finally, Mr Godfrey.

Ben Godfrey: We also welcome the additional powers bestowed under the FSO, particularly to try to accelerate and provide an optimum pathway through to net zero. We think that establishing the FSO within that role and the interactions between the network operators acting as DSOs within their area is going to be a critical role.

Clearly, we need that leadership and guidance on a national basis, but there will be lots of interactions from the bottom up ensuring that local communities and decisions made at a local level are reflected up and that we have a consistent and optimum pathway across the whole UK.

There are lots of different roles that are going to be emerging, and we can see that there is competence across different actors within the electricity system. We think that there now seems to be a co-ordinated path to make sure that the right people are responsible for the different roles and that we achieve all the things we need to achieve within the space that is 2050.

Q68 **Simon Baynes:** My question is: how will the National Policy Statement Review affect the development of grid infrastructure in Wales? If we could start, please, with Ms Quinn on that.

Roisin Quinn: We welcome the review. We feel that, although the review is very welcome, there is possibly more to do to make sure that the final statement reflects the pace and the need for net zero. We feel that a presumption in favour of the nationally significant infrastructure projects would be helpful. We also welcomed the changes to the decisions around cabling—underground cabling being the starting position in areas of outstanding natural beauty. We feel that it will take time out of the process and will also ease some of the angst of local communities in that area.

Ben Godfrey: I echo the comments there. The majority of the impact that we can see from those particular decisions are going to be establishing the routes and reducing the consenting process, to make sure that we can get infrastructure into Wales. We think that is particularly critical around the mid Wales area. I think that echoes back to previous discussions about the visual amenity and making sure that whatever is proposed isn't a network-led solution, but is one that is decided on across all parties, and making sure that the end solution has particular respect for the environment, as well as delivering a low-cost network solution.

Malcolm Bebbington: I agree with my colleagues here. We will need new network infrastructure to enable net zero for Wales. We very much welcome anything that can reduce the planning timescales and overheads of delivering that essential infrastructure for customers.

Q69 **Chair:** Thank you, Simon. We are coming to the end of this session in a few moments. Could I perhaps round off the discussion by asking each of you how the UK and Welsh Governments should ensure that there are direct benefits to communities hosting these grid and transmission connections? If I can ask you first, Mr Godfrey.

Ben Godfrey: I think that there is a clear remit that the transition to net zero should be captured locally and have the benefits delivered locally. I think one of the clear things that we can do to best enable that is to make sure that there is a mix of low carbon generation that connects both to the transmission system and is also embedded down into the distribution network. If we can create and harness more renewables locally and use that energy locally, there will be an inherent benefit to those constituents that live within that local area. I think co-ordination of transmission and distribution networks to make that happen is a clear outcome that will best enable that.

Q70 **Chair:** Would there be price benefits to local communities?

Ben Godfrey: Very much so. Indirectly, if we can maximise the self-consumption at a local level, that reduces the amount of overarching infrastructure that is needed and that will flow through the existing mechanisms.

Another part of the reforms that Ofgem is looking at currently is whether more local or granular pricing might be able to provide those signals to ensure that those benefits remain within the local areas.

Chair: Thank you very much. Ms Quinn.

Roisin Quinn: I endorse the comments of Mr Godfrey and add that, whenever we are doing a major infrastructure structure project, we will be looking to engage with the local community, provide community grants, focus on skills and development, and we are keen to explore how we can do more of that in local communities. Government can help target them in the right way and make sure that they are having their full potential and maximised.

Chair: Thank you. Finally, Mr Bebbington.

Malcolm Bebbington: I agree with my colleagues and just add that we very much think that community energy has a role to play in helping Wales to decarbonise, and we are committed to supporting it. For example, we supported a project in Bethesda that brings together local generators and communities into Energy Local clubs, which then form partnerships with licensed energy suppliers. Some of the benefits of this

have been lower bills—between 10% and 30%. This is via tariffs that encourage them to match their electricity usage with times of generation.

The success of this model I think has resulted in another 20 Energy Local clubs and in ED2. In price control periods, we have included a net zero fund, of which we are ring-fencing 25% for community energy projects with the intention of delivering a new community energy strategy in conjunction with our strategic partners.

Chair: Thank you very much. That is very helpful and that does bring us to the end of this two-part session, so thank you all very much: Ms Quinn, Mr Bebbington and Mr Godfrey. We very much appreciate your time, your expertise and your contribution. As with our witnesses on panel one, we may need to write to you with requests for further information as the inquiry progresses to conclusion, but thank you, and thank you to my fellow Committee members; few in number this morning, but we got there. Thank you all and I will bring this meeting to a close.