

# **SSEN TRANSMISSION**

# **DELIVERING A NETWORK FOR NET ZERO: PATHWAY TO 2030 AND OUR NEXT BUSINESS PLAN**

## **Workshop transcript**

22 FEBRUARY 2023

# Introduction

## Rob McDonald: Managing Director, SSEN Transmission

Can we get a little show of hands, actually? Who was involved in our T2 stakeholder engagement? Put your hand up if you were involved in that.

Oh, I would say maybe about a quarter. We've got lots of new faces, so that's great to see. Lots of new views that will be good to hear.

We're really excited about this process, and about the contribution you'll no doubt make to helping us formulate our plan. But before I get into that, a few words about SSEN Transmission first, just to make sure you know you're at the right company's event.

So look, we are the motorway, the electricity network that covers the north of Scotland. That's our patch.

We are part of the wider SSE Group, though we have our own governance, our own board, and we're part-owned by Ontario Teachers' Pension Fund, which as the name suggests, runs the Pension Fund for teachers in the Ontario Province in Canada.

So, they own 25% of us. That's a relatively recent development, and we have our own board.

We put the moss wall on the wall in our new office just because we like it. I don't know if there's any point behind that, it's just because we quite liked that.

I mentioned 2019, and I think it is worth reflecting, although a lot of you weren't involved.

We co-created our plan that we called a Network for Net Zero, and I mean that we co-created it. We didn't consult on it. And there are 2 things I'd call out during that process. There are many things I could call out, but I'll just restrict myself to 2.

Firstly, we, in developing that plan, were clear that it needed to be about net zero.

That's why we called it the Network for Net Zero, not very imaginatively, perhaps. We got a clear signal from our stakeholders, that it wasn't good enough, that it also needed to speak to customer service, to reliability and keeping the lights on, and to affordability.

And you can see all of those things reflected in the 5 goals on the left-hand side that we ultimately ended up with.

We were also told by our stakeholders, very clearly, that we need to frame the plan explicitly, and what it would cost GB Energy customers. And again, you can see the £7 number at the bottom of the plan.

The second thing I call out is investment program.

When we stacked the potential investments in T2, back in 2019, I remember seeing the first cut of the graph and I was staggered because it potentially added up to £8 billion in the 5 years which didn't feel realistic.

So, with your help and the help of other stakeholders, what we did is we split that plan between a certain view and an uncertain view, and we designed some reopeners that we put to Ofgem as a good compromise that would release money and funding when some of the uncertain projects became certain.

And that has led to, we expect, around £4 - £4.5 billion of investment during the period.

I think that's been great in getting a good balance between getting to net zero, but not spending a pound more than we need to.

And I've raised those 2 examples, because they really speak to how we co-created our plan.

We really want to hear your views, and you have a chance to influence our plan, because we haven't written it yet. Just as we did in 2019, working together.

This time we speak to you at a very early stage. We don't have all the answers, we are not being lazy, we want you to tell us the answers, so we can fill in the plan.

We think there are 3 themes.

Net zero is clearly still a theme.

Energy security, though, has probably gone up the agenda since we last spoke in 2019, and similarly, economic, social and environment legacy. You're going to hear a lot of about all those 3 today. But what I would say from the outset is, that's just our view. That's what we think are the 3 themes for T3.

One of the things we want to hear from you today is, have we got that right?

I just want to focus a little on net zero. This is one of my favourite slides.

So, the Climate Change Committee has various scenarios for how the UK economy - this is not just electricity, this is for everything - is going to achieve net zero. I forget the exact number, but it's something like 500 million tons of carbon we have to take out of the economy.

And on their projections, fully 10% has to come from renewables connected to our wee network in the north of Scotland that covers 2% of the population.

That's an absolutely staggering contribution when you think about it. 10% of the entire decarbonisation renewables on our little network.

And that's what our plan is about. Some more context, since we last spoke in 2019, the goal posts have moved.

And you can see on the right-hand side on the graphic there, some of the consultations and government targets that have changed. I won't list them all.

You're probably very, very familiar with them.

The other thing that's changed is the British Energy Security Strategy, or BESS, which has added energy security to the various list of targets on renewables and carbon that we've got to hit.

So, we bring all that together, what does that mean? The Climate Change Committee's projections, the various government targets, what does it mean? A few things.

This slide, I think, brings that all nicely together.

This slide is taken from National Grid's future energy scenarios, so they're the ESO's numbers, not mine.

What it shows is the amount of generation that's connected in our patch in the north of Scotland. There are various different scenarios, that's what the 3 squiggly lines mean. 3 different scenarios for how you can achieve net zero.

What's that telling you?

I haven't put demand on there because it's a quite busy graph, but demand currently is about one and a half gigawatts.

It never gets any scenario above single digit.

So, we're an exporting system today, and we remain that right through to 2050 on all scenarios. The second thing it's telling you is that we're about an 8 gigawatt system today, and to be on the pathway to net zero, and it doesn't really matter which of the squiggly lines you look at, we need to be about a 14 gigawatt system by the middle of the decade, by the end of T2 2026. By 2030, we need to be 22, 23 gigawatts, so we need to just about double the network by the middle of the decade and treble it by the end of the decade.

And you can see the projections out to 2050, taking us to 45 and 50 gigawatts.

The good news is the T2 investment plan that I told you about, and we talked about the 4 and a half billion pound investment, a couple months ago? The certain and uncertain view.

That will get us to where we need to be by 2026.

So, for those of you that put your hand up in the room, you got it right. We pitched that exactly right. We are on the net zero pathway.

The other good news is that Ofgem approved the ASTI project. Sorry, we are an awful industry for acronyms, we really are. We're bringing in lots of new people and that's one of the first things they say. I came across one the other day where it meant 2 different things, so we are absolutely awful. So, ASTI is not a cheap sparkling wine.

It's Accelerated Strategic Transmission Investment.

I'm going to ask Michael if I got that right.

What that means is Ofgem have approved 9 major projects - 4 onshore reinforcements, 4 offshore reinforcements. We'll talk to you about them in a little bit more detail during the day. And an innovative project, at Peterhead, with a multivendor HVDC.

The upshot of those 8 projects plus the pathfinder is that this will put us on the pathway to 2030. So, if I go back one, effectively, we'll be where we need to be on that graph. If we deliver these projects, we'll be where we need to be on that graph.

The other good thing about this, and I have to say this was very forward thinking of both Ofgem and the ESO, is it resolves a problem that has bedevilled us, certainly during T1 and 2, and that's that we've had quite a transactional approach to transmission projects.

They are approved one by one, and then that means we've then got to approach the supply chain incrementally, and in the current market with lots of jurisdictions all competing for the same resource, that model is not going to work.

So, what this does is, in effect, it gives us a job lot approval of all 8 major projects, plus the pathfinder, which allows us in turn to secure the supply chain and ensure delivery, and in the current market environment that is absolutely vital, and going to deliver huge value and ensure delivery for customers.

So, it's a big, big step forward. But there's a problem. It's not enough.

It's not enough, and I say that for 3 reasons. Firstly, the various targets that I've just shown you implying more renewable generation than the net zero scenarios, they need reconciling.

Secondly, the BESS document I mentioned gives us an explicit challenge to accelerate because we need to do more because of energy security. It's not just about carbon anymore.

And thirdly, there's this slide. This is the future energy scenarios, but going back the last 3 years. It's quite a busy slide.

The easiest way to read it is to pick a colour, it doesn't matter which one.

The dotted line is 3 years ago, the dashed line is 2 years ago, and the solid line's the most recent.

You can see what's happening. Same story in every colour. 3 years ago, we were expected to do this. 2 years ago this, last year this. What do we think is going to happen this year?

I think we will get asked to do more, and that's the evidence for that. Because you're seeing under delivery and other parts of the economy and other sectors, and that is just the reality of what we see, and that's true under all the scenarios. Blue, green, same.

So, we're going to be asked to do more, which means we need to get on top of the ASTI, figure out ways in which we can accelerate to position ourselves for the inevitable request that is going to come, that we are going to have to do more than we are as to date.

I'm conscious of time. The whole point of this is to hear from you, not me.

So, I don't want to hold the mic too much. I just want to say a few words on energy security and value for money, because, as I said, they're going to be very, very important.

There's a reference there on the slide to our science-based target to a just transition.

But the area I really want to focus on is reliability.

Reliability is going to be much more of a feature for this price control that I think it has been previously. It's getting more challenging, as the network is getting stretched, and we're putting more and more renewable generation on.

And there are very few areas of the world that are doing this. So, there are fewer and fewer areas we can compare ourselves to. So, this is a real challenge.

But it's also a challenge, because life is about trade-offs. and I think it's important we recognise that.

And reliability really does bring to the fore the trade-offs between cost, environment, and security and reliability of supply, and that's an area that I think it's really, really important that we do get your views on because it's a value judgment at the end of the day.

And the more we can reach a common view if that's possible, the better and the easier it'll be for Ofgem and others to opine on our decisions.

So, I said I wouldn't talk for long. I've probably talked for longer than I was allotted.

I'm going to hand you over to the team. I'm very excited about today and the events and hearing your views. I should have said, I think these things are really important for 2 reasons. Firstly, I think we will get better decisions if we talk to each other. If we get a wider range of views we will come to better answers than we will just from my team worrying about it in an office in Perth.

Secondly, price controls. I've been doing price controls since the 1990s. I know it's difficult to believe to look at me.

And these things are, they're about trade-offs, and they are about judgments.

And it's much easier for regulators and authorities to make decisions on judgments, if they can see that there has been a wide support or a range of views for things, or not.

And that's really, really important. I'm really glad you're able to join us today, and I look forward to hearing your views. Thank you.

Aileen?

# Session 1: Net Zero

## Aileen McLeod - Director of Business Planning and Commercial

Good morning, everybody. I'm Aileen McLeod. This is my really boring job title, Director of Business, Planning and Commercial at SSEN Transmission. My real job, I think, is Chief Nerd for Net Zero, and that's what I'm going to talk about today.

Really great to see everybody here today, and like Rob, I was reflecting on the process that we went through for developing our T2 business plan, which I wasn't involved in, and my hair was less grey than it is now, but it was a great process, and really it was made great because of all of the exceptional conversations that we had. And I say that from the depths of my heart because I learned so much from that and doing the T2 process.

And Rob talked about us publishing our business plan in 2019, but we actually started the T2 process in this very room in March 2018.

I don't know how many people here were there then. The technology wasn't quite as fancy as it is today.

And what we actually asked at that event, we had boards around the corner of the room, and we gave everybody wee stickers. It was a bit Blue Peter, not quite Slido technology. And we asked everybody who attended, what did you think the balance was going to be for the trilemma? So, between cost, environment and reliability.

And we gave everybody 2 stickers. So, we gave everyone a blue sticker, which was for now. So, for in March 2018, where did you think the balance of the debate on the trilemma was on that day.

And you can see the outcome on this slide here.

We also gave everyone a green sticker, and we asked, where do you think the balance of the debate about the trilemma is going to be in 2030, as we're looking forward?

And everybody put their dots on little things, and Vincent, who's here somewhere, collated all of that, and said on average, 2018 were almost bangs splat in the middle, pretty conservative, although you can actually see there's a good spread, and 2030, we might move a little bit more towards the environment side of things.

So, we're not asking you to do that today.

But if you were, you know, where would you put your sticker just now?

And I think when I look back and reflect on that, it just reminds me how much things have changed over the last 5 years.

And we need to take that message to avoid hubris as we go into our planning for the next T3 period. We don't know what's going to happen, and so we should be mindful of that, and mindful that the outcome is going to be very different from perhaps what we think it's going to be today.

In March 2018, net zero wasn't a thing.

Nobody was really talking about climate change and things like that. Net zero never really became a thing until the following year in May 2019, when the Climate Change Committee published its report that recommended that the government and the devolved administrations in the UK should adopt a net zero target.

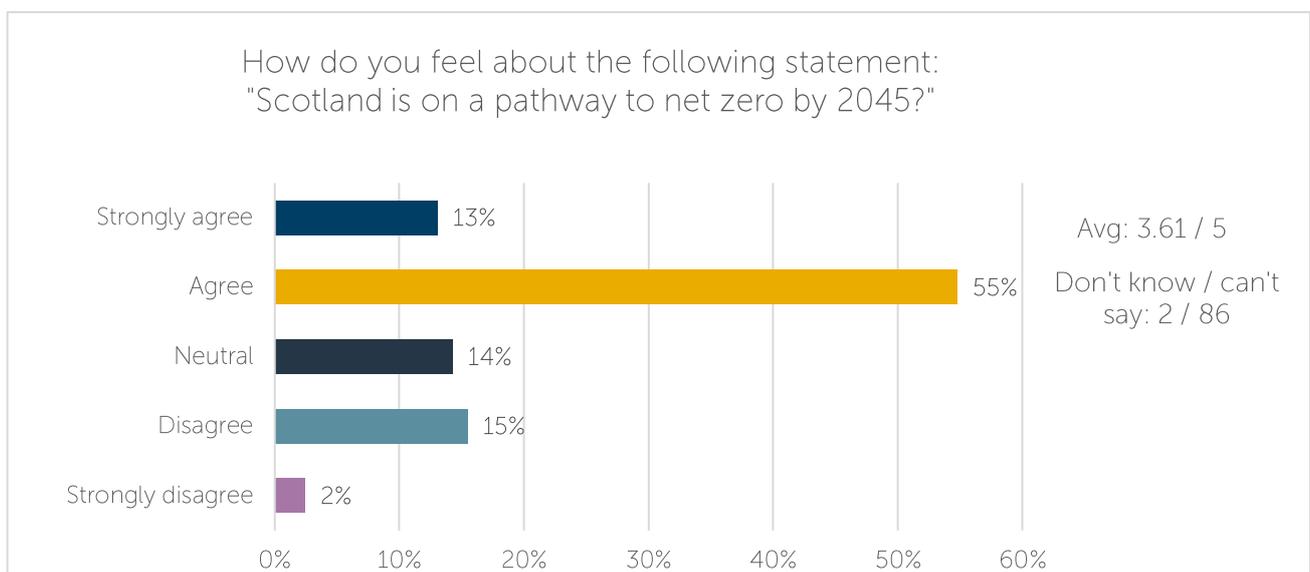
And it was amazing. It was accepted by the governments in Westminster and Holyrood and Cardiff, as we know, and all of those governments took steps to legislate. And so, March 2018, we weren't talking about net zero. 18 months later it was on everybody's lips. It was being talked about all the time.

And in Scotland, as we know, we've got a target to achieve net zero by 2045.

So sadly, and despite my best efforts to persuade everyone, we're not doing stickers today, we're doing Slido. My first question for you, if you could open up your Slido app, and hopefully this will appear, is, 'how do you feel about the following statement: Scotland is on a pathway to Net Zero by 2045?'.

Now, obviously, this is anonymous, so no one's going to hold you to account for it. But looking for your views about whether we're on the pathway or not.

This is filling my heart with joy. Keep voting. Scottish Government people, you should be photographing this and taking it back with you. Fantastic!



So, compared with 5 years ago, we didn't know what net zero was. And now more than half the people in this room agree that we're on a pathway to net zero.

And that's a transformation.

How are we getting on? What does the Climate Change Committee say?

So, in December the Committee reported to the Scottish Parliament, as it's obliged to do, that the 2020 interim target for greenhouse gas emissions reductions had been achieved. Yay! Really, really good news. Fantastic news. And you can see on the graph here that there's been substantial and sustained reduction in emissions in Scotland over the past decade.

The emissions have fallen by 59% since the 1990 baseline. So, we're over halfway there. We're over halfway there in time, and we're over halfway there in terms of emissions reductions. It's amazing.

But the Committee, in the report, when you read the detail of it, they do highlight that emissions fell in 2020 due to the travel restrictions imposed by the pandemic. The travel restrictions that I loved because it meant I didn't have to go to London every second week, but I'm sure we all had that same experience, and we can understand the impact that that had on emissions across the whole of the country. The Committee said without these restrictions the interim target would not have been met.

So that good news is a little bit tempered when you go into the detail of the report. And the Committee then went on to say that a plan to meet the 2030 target is urgently needed. So, without serious and dramatic action over and above what's already been planned or implementing what has already been planned, the 2030 target is not going to be met.

Of course, those of us who work in the electricity industry can all be slightly smug about this, because the electricity industry has done the bulk of the heavy lifting in emissions reductions in Scotland.

As we all know, as high carbon coal and gas-fired power stations have closed our renewable generators, wind, hydro, solar, have all grown.

And emissions have collapsed. Robert showed one of his favourite graphs earlier. This is one of mine, showing just the dramatic reduction in emissions from the electricity production sector in Scotland over the last 20 years or so.

However, our challenge as a sector is to grow our renewable generation base to produce electricity that's required for other sectors of our economy to decarbonise.

So, we're already right down at having low emissions. But we need to grow the amount of electricity that we're producing while keeping the emissions levels down. And we need to produce clean green electricity for cars, for heating buildings and for industrial processes.

So, Rob had lots of lines on his graph. I've only got one which is showing the scale of growth required in renewable generation in the north of Scotland, and this graph is from the Electricity System Operator's Holistic Network Design published in July last year, and the Holistic Network Design set out the GB transmission investment that's required to hit the 2030 target for offshore wind.

The horizontal axis is time, so Rob's graphs were out to 2050. This is only going out to the mid-2030s, so bringing us into a nearer term timescale, and the vertical axis is gigawatts of generation capacity in the north of Scotland.

It's pretty stark.

So installed generation needs to increase from around about 10 gigawatts today to 30 gigawatts by the end of this decade, and nearly 40 gigawatts by the middle of the 2030s. You see that just rolls off the tongue.

It's 10 to 30 to 40. But I mean, that's a phenomenal scale of growth and a massive engineering challenge.

But this is what's required to keep us on a pathway to net zero. So, we talk about a pathway to net zero, this is the practical achievement of that.

Next question I'm going to ask, which will hopefully segue us towards thinking about the T3 business planning period is about the barriers and the enablers. So, as you look forward, and thinking particularly about that timescale out to 2030 and 2035, what are the barriers and enablers? I'd really, really like it to be one word, or just 2 or 3 words, so that we can get them up here on the screen, and I believe maybe make a word cloud or something snazzy from it. So, in that timescale of 5 to 10 years ahead, what do you view as being the barriers and enablers?

It's looking pretty positive and looking pretty good.

Lots and lots of things to think about. Rob's already mentioned the supply chain.

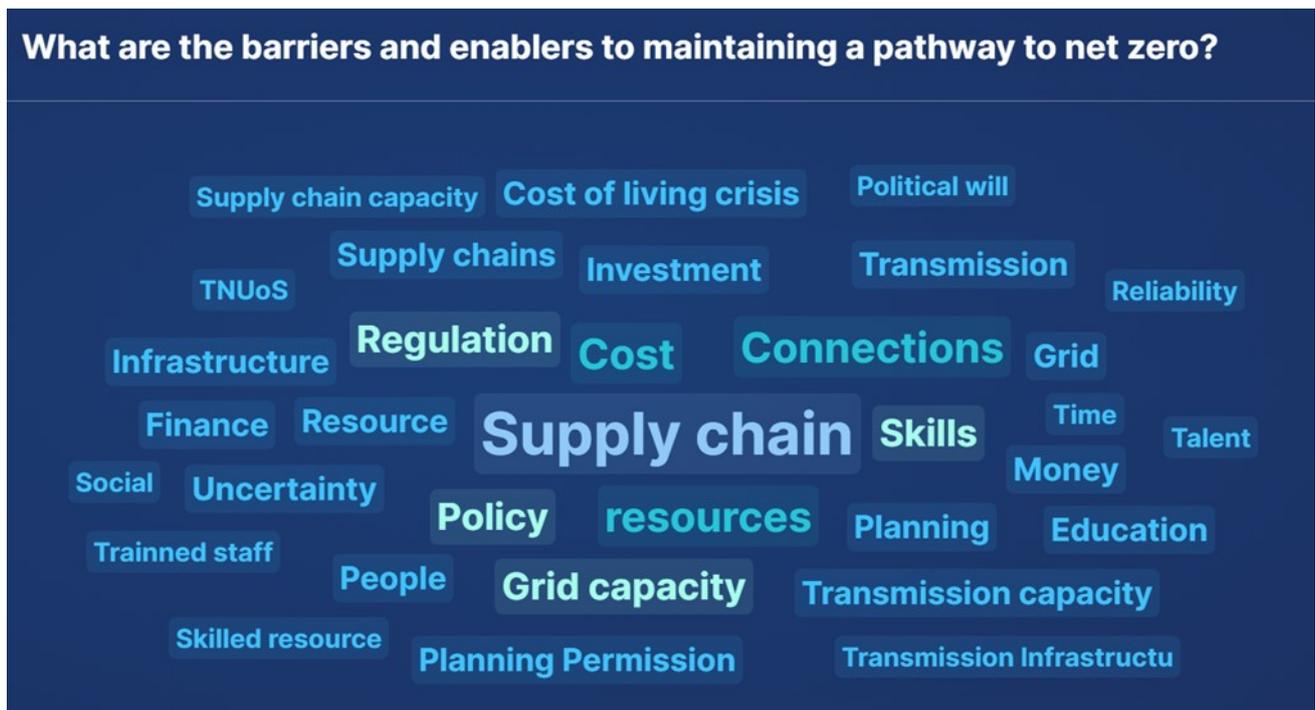
You know the scale of the investments required from us as a transmission company, but we obviously rely on manufacturers and civil engineering contractors, and all the rest of it to undertake that work.

The cost-of-living crisis is jumping out at me, and we all know that the government support for energy bills is coming to an end soon.

Labour shortage across the world. Connections.

Brilliant.

So, can I ask you to keep all of these thoughts and ideas in mind, and these are the matters that are pertinent to the development of our T3 plan, and the things that we need to think about how we can address and resolve in that planning process.



So today, we want your views on how the plan for the north of Scotland transmission system between 2026 and 2031 can keep us on the pathway to net zero. And we're going to do that by having roundtable discussions.

To stimulate that discussion, I want to share with you 3 topics that we've been thinking about very hard in respect of that net zero pathway.

And the first one is around about that sparkling wine that Rob was talking about earlier, ASTI, Accelerating Strategic Transmission Investment, or what we would call the motorways.

So, the Holistic Network Design that the System Operator published last summer was a design of the GB Transmission System to hit 2030 targets, and this is the design for the North of Scotland.

In very simple terms, we need to build all of this infrastructure in order to allow around about 25 gigawatts of generation to connect by 2030.

It's pretty simple. If we don't build this transmission infrastructure, then that generation can't connect, and we're not on a pathway to net zero.

That said, it is quite some investment program.

It's pretty much almost a wholesale rewiring of the north of Scotland. You've got major overhead lines running down the country, and major HVDC links both offshore and onshore.

Investment of this scale, while we might all agree is absolutely essential for net zero, is incredibly challenging, and it's incredibly impactful upon communities, our landscape and the economy.

Christianna's going to talk later about how we're thinking about these matters and looking to mitigate some of those impacts. And this is an area where we're really looking for views and guidance and support around about how we can do that.

We're moving at pace with these investments. After having gained regulatory approval from Ofgem on the plan in December last year.

But looking at the T3 planning period, our position on this investment program is actually quite simple.

It's already decided. So, the ESO published the analysis last summer. Ofgem approved the investment plan in December. So, basically, let's just get on with it.

But we're seeking your views today.

Are there other things that we should be thinking about in terms of the ASTI program for the T3 planning period?

Next up is the topic of the trunk roads.

The strategic investments in the 2030 plan, the big investments on the pathway to 2030 map in the corner there, they don't consider the local renewable generation connections, or the impact of changes in local electricity demand. So, they deal with the big motorways, but they don't deal with the trunk roads and the local changes.

This, we think, is actually a really critical part of the T3 planning process.

And this map from Highland Council illustrates this point really, really beautifully. So, it's a map of wind farms in the Highland Council area, so you can see the ones that are constructed, those that are in planning and those that have been approved.

And it's a real old smattering. So, you've got a whole bunch of stuff up in Caithness, around about Wick, on Skye, down towards the towards the green line basically all over the Highland Council area and the wind farms that do gain planning consent are going to need red connections, to transport the right output to the strategic grid. So, if you remember, the strategic grid, you know, runs down the coast here and across the water. But this power needs to be harvested and taken to that strategic grid.

There are 2 questions on that which we're particularly seeking your views on today in the roundtable discussions. So, the first one is, what factors should we take into account when we're planning the local grid?

This is another thing that can be extremely challenging. So cost is a clear consideration, particularly in these times of economic hardship.

Delivering net zero is a consideration. As we know, it's a legal requirement.

But so is the environment, community impact, how it looks, technology availability, supply chain availability, providing local jobs. Many of the things that were on that word cloud from the Slido question earlier.

So, we're looking for your views on what's important. So, we're planning this local grid. What should we be taking into account, and how should we weigh up different competing factors in the planning process?

Related to this is our second question, which is about how much the investments we make should plan for future requirements.

And again, this can be extremely challenging.

So, on the one hand, we could build for what we know now.

Wind farms that already have planning consent, for example. But we could be building something that very quickly becomes too small.

So, we build it, and then we could be coming back relatively quickly in a small number of years, to effectively take that down and build something bigger.

Coming back to do that is a disruption to the communities and to the environment. It can actually end up costing more.

However, on the other hand, if we build something that's got a future growth forecast in mind, there's always a risk that we're building something that's too big or building it too soon. And again, that has impacts on communities, environment and cost.

One of the key things that gives me a lot of heart now, as we look forward to the T3 period, is that we have that net zero anchor on which to build our planning processes.

So, we've got that commitment there. We've got a reasonable amount of certainty around about the pathways, so we can use that to assist us in the planning process. But these questions don't go away.

So, we're looking for your views. What should we take into account? And effectively deciding how big, how much future proofing, if you like, we should be planning for.

My final topic was one that I saw was quite big in the word cloud. It went a bit smaller, and then got quite big again, and it almost feels like my every day has got connections cutting right the way through it.

So, remember, 10 gigawatts today, 25 gigawatts by 2030, 40 gigawatts by the mid-2030s. That's quite a lot of connections. Is it real?

And this image from the Scottish Government's draft energy strategy that was published last month really shows that that pipeline for connections is real. There's nearly 70 gigawatts of known potential renewable generation across Scotland.

So, we've got way more than enough that we need to keep ourselves on that pathway to net zero. These are real projects that are out there at various stages of development, that we'll be looking to get connected to the network.

In addition, we know that there are existing renewable generators that might want to make changes to their connection arrangements, and we also know the energy use in homes and businesses is changing as well.

Making the connections process as seamless as possible is going to be critical to the pathway to net zero. I hope nobody in this room would dispute that.

If you do, please tell your facilitators. We need to know.

We've got 2 questions we'd really like you to talk about in your table discussion. So first of all, for those of you who have got experience of the connections process. What's it like?

How do you find it?

No, not everybody will. But please share that with the people around your table.

The second question is, what's required for an excellent connections service?

So, this might be things that are happening already. So don't stop doing that. And that might be things that need to change. So, what are the things that need to change, to achieve connections of this scale? And this isn't just a question for wind farm developers, but for other technologies, for large and small, and for users as well as producers of electricity.

It's time for me to stop talking and time for you to start talking. So, to recap, this first session is around about net zero and the pathway to net zero, and these are the 3 topics that are particularly vexing our mind when we look at the T3 planning period around about how we make sure our business planning keeps us on that pathway to net zero.

There might be other things. Please tell us if there are other things that we should be thinking about as well. But hopefully, this gives you a guide and a bit of a structure to have that conversation.

## Q&A

**Q** “How in Scotland can we be talking about net zero without actively discussing small nuclear? How can we discuss nuclear more as a solution when it’s not government policy?” Innovator

**A** “From the perspective of the development of the network, one of the challenges we face is inconsistent generation. We know there’s an international debate around the intermittency problem and whether nuclear can be part of that solution. It should be a public policy debate. We shouldn't rule anything out as we look forward to 2045 and 2050.”

“The Scottish government stance on nuclear comes from the First Minister down, and it’s very clear that there will be no nuclear generated in Scotland. Could you comment on the role of the ESO in some of the things we’re discussing today?” Government

“I personally love the collaborative side of working in electricity transmission. When we think about electricity transmission, it is a system which you can’t develop or build in isolation. We have to collaborate. We’ve seen the strength of that collaboration grow in the last few years. The ESO set out what are the requirements for net zero and we worked with them to set out a national plan. I hope to continue that journey in which the ESO plays a critical role in the pathway towards net zero.”

**Q** “Hexafluoride is one of the highest potential global warming gases and there’s a risk of leakage with wind farms being put up. Is there any discussion around using an alternative?” [no name given]

**A** “From the perspective of transmission, we are very concerned about our own business emissions and hexafluoride gas is one of our biggest concerns. We've been involved in looking at new technologies.”

**Q** “Are you considering using any carbon product calculations in producing the carbon products you need?” Supply chain

**A** “It would be dreadful if we ended up creating huge emissions as part of the construction we've discussed. We brought carbon into our construction plans, but there’s a different trade off: we need to move at pace but also bring down the emissions associated with construction.”

**Q** “Do you think you'll be able to be more directive about what technology you'll need on the grid in the future when you're an FSO?” Campaign group

**A** “All technologies are welcome and we need a diversity of technology. At the moment there is a cornucopia of different mechanisms in order to assure that the technologies that come to the fore are the ones that are most cost effective for the consumers. That's the basis on which we continue to plan the energy system.”

# Session 2: Energy Security

## Brian Addison - Head of Asset Management

Okay, thanks, everyone. Good morning. My name is Brian Addison, and as you can see, I'm SSEN Transmission's Head of Asset Management. So, I'm here today because one of my key responsibilities is a development of the post and strategies that define how we look after our existing assets, deciding what actions to take when the performance of those assets drops below acceptable levels when that condition starts to deteriorate, and when they reach the end of their operational life and need replacement.

I'm going to share with you all today our current thinking on the topic of energy security. Now, this is a complex topic ranging from international oil and gas markets through to the electricity cable in your house.

Our focus is obviously on the transmission grid, making sure that this stays reliable and resilient so that the electricity can keep flowing.

And it's increasingly important when you think of energy security in the context of things like electrification of transport and heating over the coming years or decades.

Now this is where I apologise. Aileen talked about being the Chief Nerd for Net Zero. Whenever the business lets me stand up in front of a group of people, I can't help but deliver a little TED talk about asset management. But this is the only slide that'll be up there today.

SSEN Transmission is a business that manages a very important portfolio of assets that impact millions of people, off in Scotland predominantly, but also in the UK and further afield. The definition of what asset management is, up there, comes from the International ISO 55001 standard.

And it clearly shows that what we do is all about realising benefit from those assets.

And that's what this session is all about today. It gives us a chance to understand what you, our stakeholders, consider is going to benefit you the most, and that will allow us to embed this into our T3 thinking.

But we're not starting with a clean sheet of paper. We've got our views on what those benefits are for us as an organisation, and I'm going to share them with you over the next 10, 15 minutes about energy security. So, these next couple of slides are going to introduce the topic of energy security. Why we think it's important today and remains so looking forward to 2031 and beyond.

We'll also look at the guidance you gave us back in 2019, and how we've performed since then before seeking your current thoughts and input.

So, we believe energy security is important, because when an emission fault happens, the consequences can be for tens or even hundreds of thousands of people.

Businesses and homes can lose power. This can also impact generation.

Some of the generation businesses are here today.

Because there might be no capability for you to export your energy onto our network.

Big concern when the margins on the system are at their tightest for many years.

And things like rolling rota disconnections due to the gas shortages have been considered and planned for, over this current winter period, with indications that over the next few years the challenges are going to be equally great.

So, going back to those transmission faults I talked about, the knock-on impact of them can take hours, days, even weeks and months to overcome. 2 examples up there on which most of you will probably remember. In 2019, a single transmission line fault had a consequential impact that took more than 1 million people off supply across England and Wales.

Which the networks felt, but not really impacting our network.

And in 2014, we actually lost 205,000 customers in the north of Scotland for a single fault on our network.

And the more eagle-eyed of you will realise that in 2014, like the second or third slide that Rob put up, there was a nice big bar on energy not supplied, and that was the impact. We lost a lot of customers. A lot of energy was not supplied in 2014.

So, that's why I believe energy security is important. So, I said we'd go look backwards.

So, in 2019, you told us that security of supply was your number one priority and that informed one of our 5 clear goals that Rob, again, showed up earlier today, which was that we would aim for 100% transmission network reliability for homes and businesses.

You'll see on the right-hand side of that slide that we've actually delivered on that. It says 2018/19, predominantly 99.99% of the time our network has been reliable and been available for 97% of the time.

So, you might ask why aim for 100% if you're currently delivering 99.99%?

And that's when I like to point you towards 2021/22, when it actually dropped to 99.98%. One one hundredth of 1%.

And that was the transmission impact of mainly Storm Arwen, but also Storms Corrie and Malik that formed a few months later.

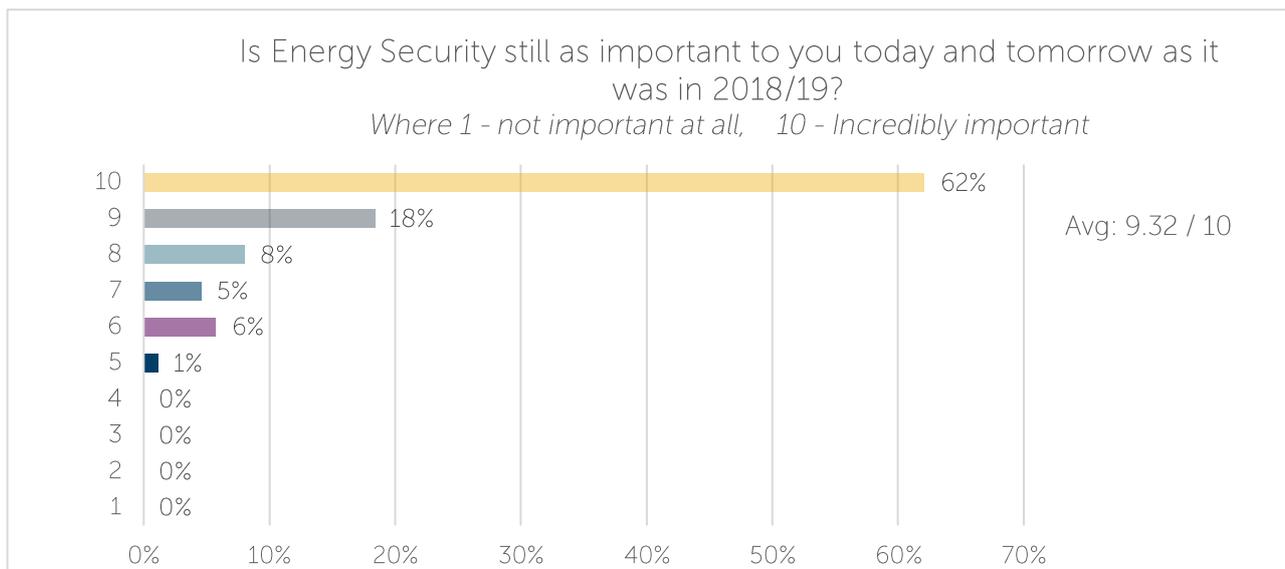
A reminder that the impact of a fault on our network can be felt by many for a long time. So that's why we believe that striving for that 100% reliability is something that will deliver benefit to all of us.

So, that's my bit about saying why I think it's important, and essentially what you told us before, and where we've been. So, it's time for my one Slido question.

So, we want to know, you told us what was important to you in 2018/19. Is that security of supply still as important to you today, and tomorrow, as it was back in 2018/19?

That's interesting. The answer is pretty much yes, so far, across the board. I think that's actually showing us that, I think the score was somewhere in the region of 8. I think something like that.

It's obviously shown that yes, it is still important to you. So that's good to know that we haven't actually got that wrong.



There is a follow up question to this, and it's a bit more open. And I'll ask if you could perhaps keep this to one, or maybe a couple of words.

Is there anything else that is also of importance to you when it comes to the security of your energy supply that we need to think about?

Well, I'm pleased that's the first one that's come up because you might remember Aileen talked about that just an hour or so ago in Net Zero.

Predictability and resilience. Independence there.

Predictability is a big thing for me, because I look after the existing assets, so that ability to understand them and predict what's going to happen to them. That's actually quite close to my heart, so I'm glad that came up. Resilience.

I'll talk a little bit more about resilience as we move on. Net Zero. Cost most effective. Completely understand that.

Because I don't have my glasses on, I can read the big words, but I can't actually read the small words. So, my apologies, if I'm not reading all of them out. I think we've actually got quite a lot there. That's actually really interesting to see.

It seems to me that we're thinking about some of the right things so far, and there are a few other areas – futureproofing, that's an interesting one that might come up in the next couple of slides. So, thank you for putting that on there. Security, yes.

Stability. Redundancy. Yeah. As long as that's not talking about me, that's fine. Okay, shall we move on from that, then? So, thanks very much for that.

So that's really pleasing, that energy security is actually more important to you now than it perhaps was when we came to you in 2018/19.



Is it right to say, look, you know what, we could minimise the impact to local communities by doing that all at once. It would be more efficient.

That's what we'll be asking. Another principle. When we do replace those old assets, you told us before it was right to keep an eye on the future.

It was one of those things that you mentioned in the Slido there. So, we'd look to build in that capability to foresee where demands may increase, because things are going to change in that locality. Rather than just do enough, should we put a little bit extra effort in and build in a little extra capacity, capability, where possible, and where it's cost effective?

Really, what I'm asking here is, I said before I want to do the right thing at the right time. Now, I'm asking, is it okay to spend your money?

It doesn't really need spending today. But if I do spend it today, it means I'll spend less tomorrow. Yeah, logic. I call this sound asset management practice, but it comes at a cost, of doing works earlier than they need to be done, and maybe making the assets a bit bigger than they need to be today.

So, when it comes to the roundtable discussions, we're going to ask you these questions. Is that still the right thing for us to do?

Are these the right principles upon which we should be developing our investment plans, or are there any other thoughts that you may have that would help us with that?

The key part of this goal for me is focusing on the last 5 words in this - 'in line with best practice'.

When I was looking at this, I thought, well, what does that mean to me? It says, if we're going to deliver this, it means we need to be at least as good at protecting our energy security to prevent whatever, or whomever is trying to break it from succeeding.

So, you know, and best practice to me also indicates that this might well be a moving target, and it will evolve and change over time. So, what are we proposing to do to address this from an energy security perspective? So, on the left-hand side of the slide, I introduce an old friend from our T2 consultations, a wheel of resilience, which describes 4 ways to ensure energy security is resilient, with resilience from all major threats.

We've talked about reliability in goal 1, and how we propose we would invest to keep the lights on.

This goal touches on probably the other 3 quadrants of that wheel. The threats that are impacting on our ability to deliver a reliable and available network.

Maybe think about what I'm going to talk to you about now as your energy security insurance policy.

There is a premium to pay for this, but if the worst happens, the benefit would be that you might be glad it was in place, and we'll talk through that. So I said, I've talked about acting to replace assets before they fail, but we, everybody who sort of like might be, you know, a regulator, we're not perfect. Things happen. Sometimes, assets fail.

So, one of the quadrants of that resilience field focuses on response and recovery. Essentially, can we get things back on track as quickly as possible? So, you know, for us, this means we're looking to invest in things like strategic spares.

High value long lead time assets that can be used to restore the network after a failure. We know you don't want to wait 2 years for things like this to happen. So, we want to be in a position where we can actually respond and recover the network as quickly as possible.

Cybersecurity is another big threat. Now the risk of cyber-attack is actually heightened, due to things like the war in Ukraine, and we've seen a number of high-profile examples of businesses and organisations that have fallen foul of cyber-attacks.

I think Royal Mail parcel delivery in the last couple of months has been one of those things where they've had problems with their international deliveries.

And we've seen examples of some European energy utilities who've had cyber-attacks in recent years that have caused widespread security problems in their areas until that's been resolved.

So, the question we're going to ask you is, is the benefit of this not happening in the north of Scotland worth investing in?

The other external threat we need to consider is the physical attack on our assets, whether it's accidental or planned.

As more renewable generation comes onto the network, the impact of availability can mean an increased cost to consumers.

They have a similar financial impact on generators. So, we'd like to review and ensure that the level of physical security around our assets, fences, CCTV, alarms - how we protect the assets from people getting too near them - meet the new national infrastructure standards reflecting the growing importance of the Scotland transmission network on the UK plc.

And in climate resilience, in this T2 period we're investing in innovative ways to model the impact of climate change factors on our assets across their lifetime.

The idea is this will enable us to make the right long-term decisions in this and future regulatory periods that will futureproof our long life cycle assets against climate risks.

I mean, an example of how we've applied things like this in the T2 period – Storm Arwen, the worst storm we've had in 70 years.

It took people off supply for days and weeks, albeit mainly on the distribution network.

And the biggest issue, particularly in Scotland, was trees. Now 16 million trees came down in Scotland alone, roughly.

Our immediate reaction to that was to say, right, well, how can we make our network more resilient? We looked at our policies and practices, realised that actually improvements could be made, and we started doing that. So, we've been cutting down trees, and you say that may not be a brilliant idea, Brian, but we're also compensating for that through planting native species, trees in other areas away from our assets. So, we're hoping that in future a tree falling will not take out our network. It will make it more resilient.

We believe it's important that we continue to undertake this type of research and develop actions that will lead us to protect our assets from damage and the consequences that brings. So again, in the roundtable, we're going to ask you that question.

Are the benefits of this actually worth us investing time and effort in it? Or, you know, should we be considering other options to ensure your energy security?

The final goal for energy security. It's probably for me the most complicated to describe.

Ensuring that we have a system capable of safe and secure zero carbon operation.

If you think back, certainly over my lifetime, electricity came from big coal and gas fired power stations.

If you needed more or less power, it was like turning the volume up or down.

I know for those of you that were in that, it was more complicated than that. But at its simplest, that's exactly what it was.

Today, it might take 200 plus wind turbines to generate the same power output as one of those big power stations.

And to be honest, our control over nature is much less certain, whether it be the wind, the sun, or the water, providing energy. It's not really within our gift to control. So, what we're saying is, there's more uncertainty, and that makes controlling our network a bit more complicated and means our capabilities need to improve.

We believe this means better network monitoring and control functionality is needed to enable us to futureproof ourselves against the network evolving.

We need to continue to help drive innovation to develop those new technologies and capabilities that are needed. Again, this comes at a cost, and that innovation doesn't always pan out. Sometimes you innovate and fail.

But the alternative to not trying to do things like this is an increasing risk of network instability that could, once again, lead to the loss of power to homes, businesses, and generators.

So, we'll ask in a roundtable again, is this the right thing to be doing?

As I said at the start of this presentation, these are our current thoughts on energy, security, and the questions we've been asking ourselves. We're interested if you have other questions about this, that we should also be considering for our T3 plan. And before I head into those group discussions, James, I will conclude my presentation and throw it over to you.

## Q&A

**Q** “Improving something that is 99.9% is very difficult. Given that we’re moving to a society where electricity will be more important and we won’t have petrol and diesel back-ups, are you looking at other ways of doing things, for example, running in island mode, looking at the n-1 security issues, radically different ways?” Stakeholder

**A** “That’s the 3rd goal about complexity of network. Yes, we’re looking at these things. It’s not my personal expertise but the answer is yes we know we need to be better. We have thoughts on what exactly that is but we can talk about it in more detail in future consultations. You’ve highlighted something we’ve thought about.” SSEN Transmission

**Q** “In terms of spending money on certain things, surely it’s a question for shareholders, are you asking us because money is putting on individuals’ bills?” Innovator

**A** “That’s right.” SSEN Transmission

**Q** “Is it completely underwritten in your investment?” Innovator

**A** “Our investment is costing individuals £7. The existing assets is clearly a subset. Yes, I’m asking are you happy for SSEN to spend money in that same way to keep the lights on rather than replacing assets. Our regulatory funding is paid by everyone, not shareholders.” SSEN Transmission

**Q** “In terms of weather, the stress comes in summer with thermal loading. Is that something that is of particular of concern to SSEN as it is in other areas?” Innovator

**A** “As we move towards 2030 and the network becomes more important, yes it does because the loss of a motorway circuit is more significant than a B road. For thermal stability, how do we protect assets over long term, knowing assets last 40-60 years?” SSEN Transmission

**Q** “What’s important in terms of spending and beefing up the system, if more transmission is going to come down through Scotland, those issues should be in people’s minds.” Stakeholder

**A** “We also design for things like that, we’re looking at development and network and system and design for these issues. I think we understand these issues.” SSEN Transmission

**Q** “How do we know that chasing 99.9% is good value for money when we’re connected to the distribution network rather than transmission network?” Electricity generator

**A** “You’re right very few people in this room are directly connected to the transmission network. When it does happen it doesn’t just affect generators that are directly connected. We switch off a lot of people when we have a fault. It’s a tiny proportion statistically but it’s a big impact. Electricity is getting more important with heat and transport moving towards it and there are fewer back up fuels. Keeping it on is more important.” SSEN Transmission

**Q** “What’s more important net zero or a 99.9% resilient network? You could deploy more renewables if you introduced more risk in network.” Stakeholder

**A** “We’ve got thoughts in SSEN on that. The drive to net zero is fundamental because you told us it was in 2019. We know that some of the things we’re talking about today are mutually exclusive, we’ve to find the right balance. We value the listening bit and you get the chance to tell us if our thinking is right or wrong.”  
SSEN Transmission

# Session 3: Economic, Social and Environmental Legacy

## Christianna Logan - Director of Customers and Stakeholders

I'm Christiana Logan. I look after the interests of our customers and our stakeholders in the transmission business. So, I am very grateful to all of you for coming along today, so we can get your views, and, as Rob said this morning, it really does make a difference. We saw the difference it made when we wrote our current business plan.

And we want to do the same thing again. Before I get into the afternoon session, I was quite keen to just take a couple of minutes to reflect on what we heard this morning, and amazing, really interesting questions that were coming up from across the group that actually made us sort of think back about the way we've divided up the sections of the day, and whether actually, in doing so, in sort of identifying these, we actually created silos in our thinking, when lots of these things are so interdependent that we need to think of them, as a whole, when we start building this business plan. So, take, for example, the questions about cost, reliability and net zero.

It's not just about the reliability of the existing network. It's about the assumptions we make on the requirements for reliability as we build the new network that's needed for net zero, knowing that that new network is going to have to supply, not just electricity but transport and heat in order to achieve that net zero, and that all of that comes at a cost, but also will hopefully contribute to energy security and protection in terms of cost from the impact of importing fuels from other nations.

So, this is all very interdependent, and I think that's been a great reflection from today already in terms of how we approach our ongoing engagement on the business plan, and how we build the materials for it together. So massive thank you to everybody for that.

It's not just about what we invest in. It's also about the way in which we do that, and that was Rob's point earlier about value for money from the work that we're doing from the minute we pull together. So, this afternoon I'm going to talk about a few subjects under the heading of economic, social, and environmental legacy.

I'm going to start off by talking about greenhouse gas emissions.

When we set out to develop our current business plan, we recognised that our most material contribution to tackling climate change and the climate emergency was absolutely our ability to allow low carbon connections to our network to enable to contribute to that energy system and that wider decarbonisation of the economy.

What we also recognised, though, was that we had to get our own house in order in terms of our own business carbon footprint. And that's why we set a target for a one third reduction in our greenhouse gas emissions.

That target is based on a pathway to a one and a half degree scenario for climate change. That's what the science says is required to avoid the most detrimental and dangerous impacts of climate change. This was all very new. We were actually the first electricity transmission network in the world to have a target in line with the one and a half degree pathway approved by the science-based target initiative. So, this was really leading the way.

And actually, it's now become relatively standard across energy networks to be committing to these kind of targets. So, it was really at the vanguard at the time.

The way that we are approaching delivering on these targets is through a number of actions to reduce our own emissions. That includes things like greening our fleet, shifting to electric vehicles, and so on.

It also includes measures to improve the energy efficiency of our substations, the assets that Brian spoke about, even potentially putting solar panels on those to actually reduce their emissions at the substations further.

It also includes a hot topic from this morning, action to reduce the use of SF6 gas on the network. So as Aileen mentioned, that's a really toxic greenhouse gas, much worse than carbon, and it's also a superb insulator. So it's used pretty vociferously in the industry for switch gear and circuit breakers. But we're taking really innovative steps to work to avoid that.

What we're doing is adopting new alternative gases that are much less damaging to the environment, which allow us to still build gas-insulated switch gear, and so on, which is a smaller footprint, and hence less of an impact in terms of land and local communities, but doing that in a way that's not adding to those climate emissions.

Last year we actually contracted for this, first in the world deployment of SF6-free switch gear AV. So that's right at the top end in terms of the voltages that this could be applied to. So again, really pushing the boundaries on what can be done there.

And reduction of leakage of this gas, which happens when you have any faults on those assets, is actually incentivised by the regulator, and in the last price control we were able to reduce our leakage of this gas by 50%, by taking measures to better identify and then repair when there's issues and leakage of the gas.

So, some superb steps and they are having an impact. What we've seen is that our operational carbon footprint has been coming down as a result of that action that we're taking.

The challenge that we have, though, is that whilst these measures are helping to reduce the relative emissions from our network, we keep having to build more.

So, at the same time as this number came down, we actually grew our network from 7 and a half gigawatts to 9 gigawatts. So, we've reduced the intensity of the emissions from these assets.

But you saw in this morning's presentation the scale of what we're going to have to build, to be able to put us on that pathway to net zero. And while we're bringing down that relative intensity of our emissions, we cannot completely decouple our operational carbon footprint from the scale of our network and the emissions that come with operating that.

So, this is a real challenge that we're going to face as we go into the latter part of the decade and beyond, as we continue to expand the network.

To give you a sense of the relative scale of this, we've got another graph. We love a graph in SSEN.

Is that just us? There's some laughter, so maybe it is just us. But what we've done here is just shown for those 2030 projects, right? Those are the ones in our area that are kind of turquoise-y colour on the big maps. Those are all the new projects we need to build to hit those 2030 targets. And what this shows is an estimate of the life cycle carbon emissions of those projects.

Basically about 2 million tons of CO2 equivalent. Then it shows you what the carbon displaced by that would be saved by delivering that infrastructure and enabling the renewables to connect onto the system.

Then it shows you if that energy is used to displace fossil fuel elements in the economy - so, for example, transport and heat - the further displacement of carbon that it would deliver. So, in terms of the scale, you

can see the massive benefit that comes with the expansion of the system and the wider carbon displacement it enables.

For comparison, if you remember that last slide, our own current operational carbon footprint is about 8,500 tons.

So even if our carbon footprint was to triple you're still looking at 20,000 tons.

This huge displacement of millions of tons of carbon within the economy. So that is the challenge that we face. We want to make sure that our own emissions are reduced as far as possible, but we don't want to be setting an absolute production target, or to become a barrier to us building the bigger network that is needed to enable this wider carbon. Does this make sense?

It's post-lunch. But yes, nods, excellent. Okay, good. I'm glad. So that's what we're going to be asking today. Who's on greenhouse gas, on this side? Oh, in the middle of the room. So, the conundrum we really want your help with is that is, what's actually a rational target for us for the back end of the decade in respect of the fact that we have so much growth to deliver? So, we'll get the conversations going on that.

I move on in greenhouse gas emissions to talk about another aspect of environment.

Biodiversity is a real focus within our business. We're actually, as a globe, facing an unprecedented decline in biodiversity. And whilst biodiversity is important in its own right, it's also critically important to the natural systems that support the way we live, whether that's things like flood regulation or food production, and all of this is intrinsically linked to the climate challenge as well, because those things often really impact on each other.

So, in our last business plan, what we committed to do was to actually achieve net gain on all new projects from 2025. So, all new projects that we build from then on will improve biodiversity. So rather than having a negative impact, we'll actually improve the biodiversity on those sites.

That means really working to restore habitats as opposed to just minimising impact on them. So, it really is doing positive improvements in any locations where we're building new infrastructure.

And we're actually already doing so on some of our projects. If I move on to the next slide you can see our Spittal substation habitat. So, before we developed this site it was classed as native grassland, actually maybe improved native grassland. So, it's not actually very high value, from a habitat point of view.

What we've done on this site is we've actually put in planting with native broadleaf species. We've also planted hedgerows. We've put in wetland, we've actually created a new wetland on the site as well.

And we've done scrub as well, and you can see the different flora and fauna marked on there to show you the different kind of effects that that's having and that all resulted in actually a 34% gain in biodiversity at that site, which is pretty significant. And we've got other sites that are achieving rates even higher than that already. So, for a target that we set for 2025, we're off to a great start.

Since we developed that business plan, though, things have evolved. I think there is, you know, even more understanding of the challenge from our perspective, and what needs to be delivered to improve our natural systems. And really the conversation has moved on to being more broadly about a nature-positive approach.

So, this again means not just stopping the loss of biodiversity, but actually improving natural habitats and increasing opportunities for nature.

That term 'nature-positive' is something that we've picked up from the likes of Scottish - I'm going to say it wrong - NatureScot, and their equivalent environmental agencies that are working on what 'nature positive'

will look like by 2030. For us, thinking about what we need to do in our business plan on this is again, a bit of a challenge. It's so new.

There is not currently a lot of information available in terms of what the baseline position for this is. So, to be able to really set goals we're going to have to better understand the impact on the land and on nature more broadly.

So, we're working in collaboration with our peers in this sector to develop different tools and resources, to help us better measure, monitor and manage our impact on nature.

What we want to know from the tables that are looking at this topic is, given that limited information that we currently have, what are the right approaches for us to be adopting? How can we set some reasonable goals and potentially targets in this area ahead of necessarily having all the data?

And also, who should we collaborate with? Because this is not something we can deliver on our own.

This will absolutely need other parties on board on this journey with us. So, we'd love to gather, I think it's this end of the room, your thoughts on how we can do that collaboration and get the best out of these projects.

Okay, before I move on from environment, I want to talk about visual impact. This is something that we see in a lot of the engagement we have with stakeholders when we're constructing new projects. It's one of the top aspects that local communities are concerned about, but also wider statutory consultees that are involved in the planning and consenting process.

In recognition of that, for quite a while now, as network companies, we have had a fund as part of the price controls (thank you, Ofgem), that allows us to make improvements for the visual impact of existing infrastructure when it's within natural parks - national parks, sorry - or natural areas of scenic beauty.

So, it's quite a strict set of guidelines about what types of projects in which locations can apply into this fund.

But the money is there to allow us to make improvements that minimise, reduce or minimise the visual impact. That can be technical solutions like what you can see here, taking down overhead lines and towers, and actually replacing those with an underground cable, or potentially re-routing projects so that again they have a reduced visual impact.

But it can also be non-technical projects, doing things like screening with new tree planting and other measures that are really around the more kind of landscape, recreational or social benefits that can be brought to areas in the vicinity of these national parks.

We've had those funds available since 2016, and we've actually delivered 4 technical projects, and we've got some more in construction as well, and we have yet more projects in development. So, in the Cairngorms National Park we have done projects round Nethy Bridge and Boat of Garten that have reduced the visual impact.

They've actually removed over 12 kilometres of overhead line within the national parks there. In the Loch Lomond and the Trossachs National Park, we've delivered projects at Sloy, which is the one that's shown in the pictures. And we've got some work underway at Killin as well which will remove further overhead line infrastructure and in total those projects will take 16 kilometres of overhead line out of the National Park. So really great work, and it's something that's been really well received by the National Park authorities, but also the local communities and wider users of that natural resource who are appreciating the improvements that are being made.

It's also not just these technical projects we've done. We have done projects on the non-technical side of things. And so this is actually some pictures from Loch Tummel, I don't know if anyone knows the Queen's

View. Really great scenic site and it's a sort of viewing point for tourists essentially so this has a tourism benefit as well.

And what we've done there is we've actually screened the overhead line by planting native species, and we've also painted the towers as well to reduce the visual impact.

Now I visited this site with our stakeholder panel way back when we were planning this current business plan, so like as Aileen and the team said about 5 years ago, probably, that we visited, and it's amazing now to see the difference that this project has made and genuinely, I will buy a cake for anyone that can point to a tower in that after picture - except the VISTA team. They are definitely not allowed to play. But genuinely, I just think it's incredible how much of a difference that has made in terms of the improvement.

And, by the way, it wasn't us that cut down the trees behind the line. That's Forestry.

So really amazing and we've got lots more to do in this. We've got more technical projects currently in development that we plan to submit to Ofgem over this year, and next.

Beyond that we've got 14 potential non-technical projects identified, and we're currently going through the development and refinement of those.

We want to deliver those in collaboration with the local supply chain, using existing and new partnerships, and we want to do it in such a way as to, again, add to the local biodiversity and also contribute to Scottish Government tree planting targets as well. And the pot of money for these non-technical projects is actually pre-approved by Ofgem, which means we don't even have to go back for more approval. We've got just over 11.5 billion pounds to spend on those, and we will be going for it.

That was dead positive, right? What's my theme? I tell you all the good stuff and then I say, but there's a challenge. So, there is. A challenge here is actually, once we do those 4 technical projects that are identified, we've exhausted the opportunities for technical projects that can be delivered, that are within the guidelines for national parks and areas of scenic beauty, and there will still be money left in the pot.

So, question is, should we look to extend the guidelines so that we can do more good work like this in other areas? And that's the question that we're going to be asking to the tables that are talking about VISTA, which I should have explained. If your table says VISTA, that is the acronym for Visual Impact of Scottish Transmission Assets project that this funding goes into.

So, we want your thoughts on that. Because we hear this so often from communities and other stakeholders as we talk about the 2030 projects, and others that we're building to deliver this net zero ambition, we can see that there probably could be benefit from extending these types of funds to additional options for things like, where we have existing infrastructure and we're going to build more new additional infrastructure, could there be an opportunity to actually rationalise that and reduce the cumulative impact visually within these local areas?

So that's the kind of thing that we're conceptualising. And we'd like your views on whether you think that's a direction of travel that we should look to engage with Ofgem on.

We kind of saw this coming, and at the start of the last price control we did raise that we thought we would actually look to ask this question during this phase, and the guidelines from Ofgem were, let's talk about that at the next price control with evidence from stakeholders. So, this is us kicking off that conversation so we can gather the views of stakeholders to be able to decide the right thing as we go into the next price control.

I've got one last environmental thing before I get on to circular economy, but before I do, we've got a Slido. Just to check you're still awake after lunch, so if you can get your Slido, do I need to click again to get it to come up? It'll just magically happen, James. That's excellent.

This is why you work with the professionals.

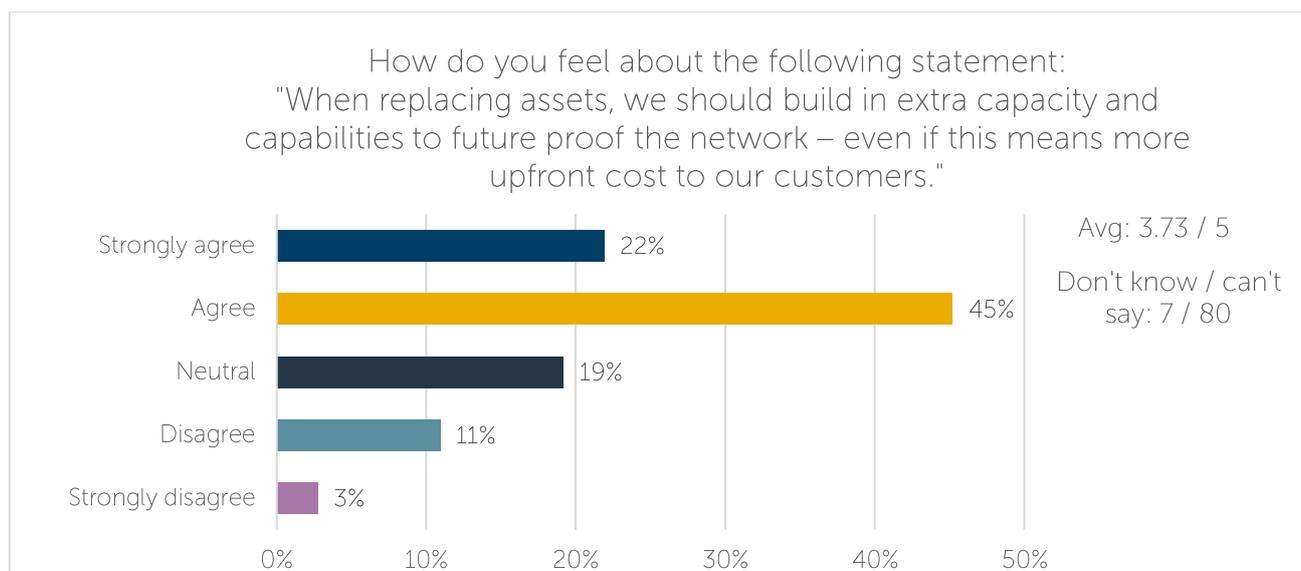
All right, so a view from the room. Do you think we should extend the qualifying criteria for visual impact projects?

This is good. This is a good mixed response.

Those that have said neutral, is that just a post-lunch lethargy, or actually you don't mind?

This is brilliant. Just as the last few votes come in, we have a bit of context to this. This voting is excellent for us to have a little bit of quantitative data to go with the really valuable feedback that we get through the roundtables, and do not worry that we're going to go and plan our business plan just based on a Slido poll from 80 people in a room in Glasgow. What we'll do is use the feedback we're getting to help us plan our next phase of engagement to really get into the detail on this stuff and understand the issues that are behind all these kind of votes.

All right. I think we're probably at as many as we're going to get now, so I shall continue on. Thank you for that, and actually quite a lot of agreement. So, we'll get into the discussion.



Right, last thing on environment. Circular economy.

So, this plays into UN Sustainable Development goal 12, which is about responsible consumption and production.

A bit like the environment and biodiversity, there is an inherent link between our consumption and production, and climate change. And the growth in the network that's going to be required to deliver net zero is going to require more raw materials, and is probably going to increase waste.

Now we already have measures in place to manage waste from our construction sites and our operational sites, and we do have schemes for things like reusing materials when it's safe and efficient to do so.

But going further on this, towards more of a full circular economy approach, is going to require really close working with our supply chains to understand things like the sourcing of our raw materials, and also our original equipment, where that's being manufactured, where it's coming from.

And again, then that point at the backend of the process around waste, how that's minimised and managed. Scottish Government has been consulting around their circular economy approach and ambitions, and what we'd like is your views on what your expectations are from us for our next business plan around the circular economy.

So again, I'm going to take a view from the room.

Oh, my! Too far!

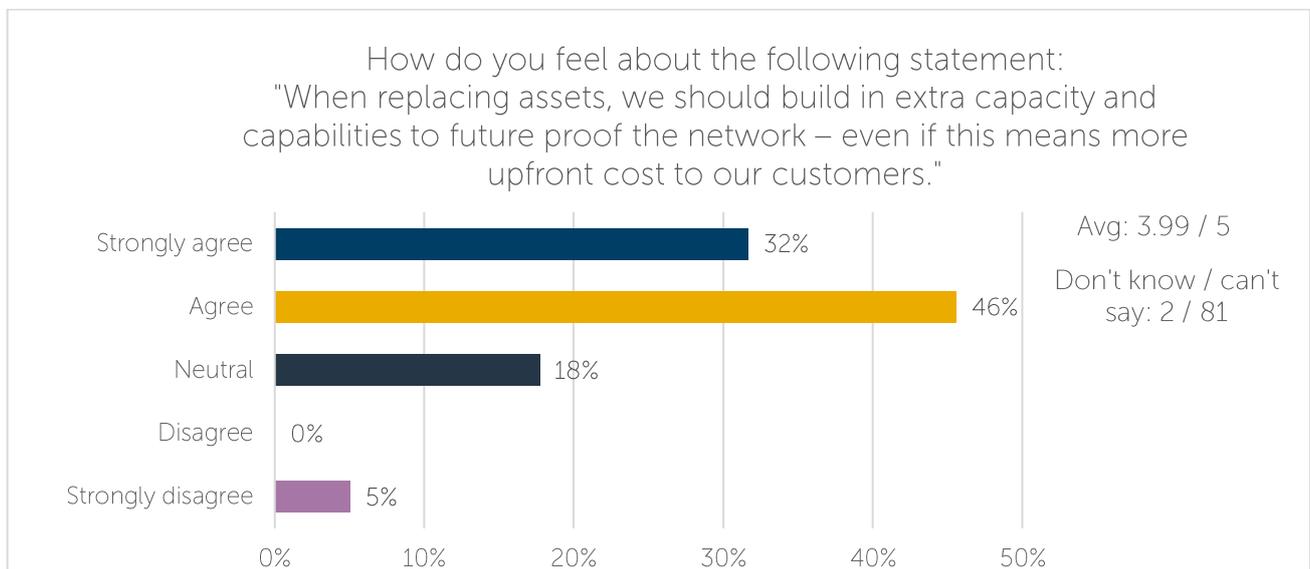
There's a lot of agreement on this isn't there.

Excellent

Aileen. It sounds like we'd better add this to the list.

It's a thumbs up from Aileen. That's a good sign.

Excellent! 81. I think that's pretty much us, excellent. Thank you so much.



So, I'm going to move on from environment in some ways and start to talk a little bit about our socioeconomic legacy.

For years now we've received questions from local communities about why there are no benefit funds associated with our infrastructure in the way that there is for things like wind farms that are being developed within these same areas and same communities.

Whilst we do have some positive work that we're doing around things like local supply chain commitments that keep investment within local economies, and while we work a lot with our local contractors to support local causes, we do not, as transmission companies, have funds associated with our infrastructure projects like those renewables projects do.

To give you context, lot of those renewables projects are putting roughly single digit percentages of their capital investment into community benefit funds.

The linear nature of our asset, as you can see on the maps, means that actually sometimes this infrastructure impacts on communities that are way outside the boundaries of the renewables projects that they are actually enabling.

So those communities cannot always benefit directly from the funds supporting the renewables projects.

Again, the scale of growth of what we're talking about, and the amount we're going to have to build over the next decade has been recognised and the UK Government in their British Energy Security Strategy has committed to ensuring that local communities can benefit from hosting strategic network infrastructure.

They've specifically committed to consult on community benefit fund options.

So, we have been developing our own thinking on this in order to feed into that consultation.

We've got some initial views, and I'd like to run them by you.

Our current thinking is not to wait until the next price control.

We'd actually like to put in place community funds this year from all projects with a capital investment over 100 million pounds.

To learn lessons from the early wind farm community benefit funds, we want to make sure that funds are available both to local communities beside their infrastructure, and also the wider societal community of the north of Scotland, that is hosting the strategic infrastructure. So, we were proposed to split funds into both local and regional pots that can be applied into from those different groups.

Again, learning those lessons, we want to make sure that our benefit funds are benefiting communities, not individuals.

That's what the nature of this work is. And to support that, also link it to the wider delivery of net zero.

And our current thinking on that, guided with early conversation with the stakeholders, is to focus funding around things like education, skills, employability, and also potentially accreditation of small and medium sized enterprises to enable them to actually bid for work on these big projects that are going to deliver net zero.

All of that will require really clear guidelines to make sure that communities know what they can apply into for this, and also to make sure that those projects that are successful in being awarded funding, really do deliver a socioeconomic benefit, and that actually comes to fruition.

So again, on this, we would like your views, please, on what the right approach to community benefit funding would be, the right level of investment for us on projects of different sizes, and again, who we should work with to actually get the best views on how this should be developed further.

# Q&A

## Hosted by Greg Clarke – Head of Corporate Affairs

**Written Question from Allen Kelly:** “How achievable are your 2030 network upgrades? What do you consider to be your main obstacles to overcome?”

**Aileen** - “That’s totally the right question to be asking. Let me talk you through the thought process. Around this time last year the British energy security strategy was published, we saw the war in the Ukraine and the cost of living crisis. We could feel that momentum in the Net Zero journey build in SSEN. The holistic network design shows the direction of investment, and these maps only tell a part of the story. Looking forward, it is quite something to take on, and what we need to do to achieve it is the thought process that we really engaged with in earnest. We’ve had rigorous conversations with the Government and regulators to turn it into a reality. We’ve had to consider planning consent and how it can cope with this scale of investment without a detriment to the environment, and consider the supply chain and huge manufacturing and installation capability needed. These are active conversations we’ve been having over the last year. Quite simply, we’re up for it. We’ve considered how hard it will be, and identified the challenges and if we all work together we can do it. I personally believe that you have to believe you can do it, so I’m sitting here saying yes we can do it.”

**Brian** - “We have the availability of our network to do it. If it was easy anyone could do it. There are quick hard decisions to be made, I have to think about whether we can fit in all the things I think need to be done, or keep assets going to hit the next pricing period. We’ve been sitting as a group across transmission to see how we can get better at doing what we do, and I have to think about how my decisions might impact someone else doing their job effectively, it’s all about how we make it happen.”

**Christianna** - “We’ve seen a huge growth already, when I started we had 150 staff, we now have 1,300 and are looking to bring in another 500 plus to achieve this goal. This growth allows us to do the work. 25% of the business is a new investment opportunity for Scotland and its investment in Scotland. We want to keep some of that local and get the best out of that investment. All our shareholders are also up for it, so it’s really exciting.”

**Written Question:** “With a whole system approach, what role is there to help support systems and reduce the strain on the infrastructure?”

**Aileen** - “With a ‘whole system approach’ it’s difficult, as what a whole system is in London is different to here, in part due to geography but also the different mix of energy produced and consumed, and the opportunities created. It’s a local question, and we then patch work in to create an economic outcome for the whole Country. I think that way, with a bottom up approach, for example, the Scottish Islands are on one hand incredibly rich in renewable energy, but they also have the highest level of fuel poverty in the UK. If we can bring them the economic benefits it will be felt more than anywhere else. We have to look at what the community needs, and think about the long term. We are now starting to see decarbonisation which is a further consideration for a whole system development. I don’t have a wonderful answer, but I think beyond the grid beyond transmission and distribution, if we build from the bottom up we will have a whole system across Scotland and the UK without realising that’s where we’re going. With storage, I read a report that scared the pants off me at the back end of this decade, which showed we will have many more intermittent generation periods where we have a gap. An uncomfortable gap. That needs to be filled by storage and long duration storage. Batteries are important but won't cut it. Pump storage is good but there’s no route to market. Hydrogen again there’s no route to market. Network companies need to think about how hydrogen operates on the system so that it can

be relied upon to keep the lights on, and have a route to consumers who need it. We're responsible for this development in the North of Scotland and it keeps me up at night."

**Question from Michael Clarke of EDF Renewables:** "It's more like two questions, firstly with regards to resources, it's good to hear the numbers are going up, but National Grid by 2026 have said they will be looking at 8 billion a year. These are game changing figures. Have we got fitters, substation designers, etc., to cope with that, it's such a magnitude of difference? Secondly, has FEZ plateaued or will it keep going up?"

**Christianna** - "Simply, no we don't have enough people, we are feeling the crunch in the development phase especially, we also need engineers and construction workers. We are bringing in base people through all sorts of different programmes, including getting people in from abroad. It's another reason we are deploying funds to encourage people into specialisms to deliver the scale of growth happening. This whole package of projects gives us a long plan with a supply chain, especially using apprenticeships. People know the work is there and we are working ahead to actively bring them in to build careers."

**Aileen** - "With regards to FEZ, it's the next generation that will solve this problem. It has maybe plateaued. Electricity has been around for a while now, we know what it is and how to generate it, transport it, how much it costs, and how to do it safely and manage it. There are other technologies being developed and coming in, not just in our sector but in heat and manufacturing. Alternatives to electricity will be sources in the future. If they don't develop quickly, FEZ will go up, if they develop quicker it will come down."

**Question from Roy Foster of Hydro Power:** "You said you're kept awake by the lack of long duration storage, what do you personally define as that and your if storage dream came true what would it be?"

**Aileen** - "Speaking personally, not as Aileen of SSEN but just as me, long duration storage would cover intermittent drops in renewables, and for me it would be the deployment of pump storage. I would love to have them on the system to keep the network stable. They're expensive but so are other baseline technologies. Personally I lived through the coal mines closing in the North of Scotland, I don't want that again. I want to see them develop hydrogen so that doesn't happen. I think we are a long way from solving the gap in the network, but going forwards we have a fantastic track record in the UK of developing the right technologies through Government support. We can't design perfectly, but why mess with things that work."

**Question:** "With regards to connecting to the system, the transmission capacity calculated is out of step with modern technological solutions. With an abundance of new renewable variable generation on the system, is there a better way to manage access based on the role capacity may play? Connecting to the grid takes a long time, looking at this and reforming grid access, what form should it take to also meet Net Zero?"

**Christianna** - "I'm heavily involved in working collaboratively, what we see is that the amount of generation is significantly in excess of what we need to meet Net Zero. Everyone who has a contract with us to get projects connected, well not all will go ahead, but it's not our place to judge what will or won't. This is a big challenge for the sector, and we need to be real about it. We cannot sit with endless queues with projects that aren't going to progress, so we're actively working on proposals looking at assumptions when planning the systems, and how connecting parties will operate. It's a programme of work to look at methodology and what capacity is required, and all of that goes some way towards helping, but it won't fix the issues. We still have a challenge as an industry so we're looking at what bold moves we can make, and determined consultations are underway so stakeholders can feed in to that. We are on the case, and we recognise the challenge. Our main focus is meeting the needs of customers while delivering Net Zero."

**Written Question from Alan Kelly:** “With construction, planning assumptions are intended to mitigate the queue. Will you conduct a review and revise assumptions in the near future?”

**Aileen** - “When we plan the transmission system or make offers for connection we make assumptions about how they use the system, so for instance we are not assuming a wind farm operates 100% output every day of the year. These assumptions have been around for a long time, and we don't have a long term historic record of new technology. We're looking at an intuitive process with more data to improve assumptions, and changing these assumptions effectively creates more capacity because we make more of the system we already have. Part of the reform process underway at the moment is looking at what it means for everyone who has a connection at the moment. For context, the queue is huge, we make over 30 offers every month and that's continuing to grow. How do we look at everyone who already has a connection, and the new ones? The short answer is I don't know. We're still figuring it out. We've not done anything of this scale before. What we aren't doing, is putting connections on hold in Scotland while we figure it out like other companies are. We know how important it is to juggle our way through this change. It might be messy, but it will be worth it.”

**Question from Greg Clarke:** “What gets you up in the morning?”

**Christianna** - “It sounds like I'm just saying this, but it's the fact that we are going to deliver Net Zero. I've always been called a bit of a hippie, but I want to have a healthy planet. There are very few jobs where you can see the scale of contribution you're making, which is so far beyond your own impact. Plus I love a challenge!”

**Brian** - “I have a lot of colleagues in industry, and I've been here for 35 plus years, first as an engineer and now as an asset manager. This is such a challenge, why wouldn't you want to be involved! I wish I was 15, 20 years younger. When I joined this industry just as privatisation was happening, and you've got a job for life. I'm at the top of the age group saying the same things to graduates coming into my team. It's one of the biggest challenges, who wouldn't want to be involved in that.”

**Aileen** - “When we asked who wanted to come to this event today from SSEN, we had over 50 people who said yes. We get our energy from the people we work with. This business has grown so rapidly, we've ramped up our apprenticeship and graduate programmes, and the scale of excitement they bring and the opportunity to be involved in the face of that enthusiasm for what we are trying to achieve. You can't beat it.”