Cofnod y Trafodion
The Record of Proceedings

Y Pwyllgor Amgylchedd a Chynaliadwyedd

The Environment and Sustainability Committee

22/10/2015

Trawsgrifiadau'r Pwyllgor
Committee Transcripts

Cynulliad Cenedlaethol Cymru
National Assembly for Wales

Cynnwys
Contents

Aelodau'r pwyllgor yn bresennol
Committee members in attendance

Mick Antoniw	Llafur Labour
Jeff Cuthbert	Llafur Labour
Russell George	Ceidwadwyr Cymreig Welsh Conservatives
Llyr Gruffydd	Plaid Cymru The Party of Wales
Janet Haworth	Ceidwadwyr Cymreig Welsh Conservatives
Alun Ffred Jones	Plaid Cymru (Cadeirydd y Pwyllgor) The Party of Wales (Committee Chair)
Julie Morgan	Llafur Labour
William Powell	Democratiaid Rhyddfrydol Cymru Welsh Liberal Democrats
Jenny Rathbone	Llafur Labour

Eraill yn bresennol
Others in attendance

Chris Blake	Cyfarwyddwr y Cymoedd Gwyrdd Director, The Green Valleys
David Clubb	Cyfarwyddwr, Renewable UK Director, Renewable UK
Yr Athro/Professor Malcolm Eames	Sefydliad Ymchwil Carbon Isel, Prifysgol Caerdydd Low Carbon Research Institute, Cardiff University
Stephen Stewart	Cyfarwyddwr, SP Manweb Director, SP Manweb
Nigel Turvey	Rheolwr Dylunio a Datblygu, Western Power Distribution Design and Development Manager, Western Power Distribution

Swyddogion Cynulliad Cenedlaethol Cymru yn bresennol
National Assembly for Wales officials in attendance

Martha Da Gama	Clerc
Howells	Clerk
Alan Simpson	Cynghorydd Arbenigol Expert Adviser
Adam Vaughan	Dirprwy Glerc Deputy Clerk
Graham Winter	Y Gwasanaeth Ymchwil Research Service

Dechreuodd y cyfarfod am 09:32.
The meeting began at 09:32.

Cyflwyniad, Ymddiheuriadau a Dirprwyon
Introductions, Apologies and Substitutions

[1] **Alun Ffred Jones**: A gaf i ddechrau'r pwyllgor a chroesawu'r tystion sydd o'n blaenau ni? Gwnaf jest rhestru rhai o'r manylion arferol: os bydd larwm tân, dylai pawb adael drwy'r allanfeydd, wrth gwrs; pawb i ddiffodd eu ffonau symudol neu eu rhoi nhw ar 'tawel'. Rydym yn gweithredu'n ddwyieithog, felly os oes rhywun eisiau holi yn Gymraeg neu'n Saesneg, gwnewch hynny—mae'r cyfieithiad ar gael.

Alun Ffred Jones: May I start the committee and welcome the witnesses we have before us? I will just run through some housekeeping matters: if there's a fire alarm, everybody should leave through the exits, of course; everyone should switch their mobile phones off or put them on 'silent'. We operate bilingually, so if anyone wants to ask questions in English or Welsh, feel free to do so—there is simultaneous translation available.

[2] Headsets are available if you are in need of translation or augmentation.

[3] Peidiwch â chyffwrdd â'r botymau o'ch blaenau chi—mi fydd y meicroffonau'n dod ymlaen heb i chi wneud dim byd. A oes rhywun eisiau datgan buddiant o dan y Rheolau Sefydlog? Na. A gaf i jest groesawu hefyd Alan Simpson atom ni, fel ein

Don't touch the buttons in front of you—the microphones will come on without your having to do anything. Would anyone like to declare an interest under the Standing Orders? No. May I also welcome Alan Simpson to the meeting, as our expert? Alan

harbenigwr ni? Mi fydd Alan yn cymryd rhan yn y sesiwn, wrth gwrs, yn ôl y galw.

will be taking part in the session as required.

09:33

Ymchwiliad i 'Dyfodol Ynni Callach i Gymru?'
Inquiry into 'A Smarter Energy Future for Wales?'

[4] **Alun Ffred Jones**: Iawn. Fe wnawn ni fwrw ymlaen. A gaf i ofyn i'r tystion gyflwyno eu hunain, os gwelwch yn dda, i ddechrau? David.

Alun Ffred Jones: Okay. We will go ahead. May I ask the witnesses to introduce themselves, please, to begin with? David.

[5] **Mr Clubb**: I'd like to start by saying that smart energy is a sector that is—

[6] **Alun Ffred Jones**: Before you start, could you just introduce yourself and then I'll come back to you?

[7] **Mr Clubb**: I'm David Clubb, director of Renewable UK Cymru. So, we represent not just renewables, but smart energy and grid and all the rest of it.

[8] **Professor Eames**: My name's Professor Malcolm Eames, from the Welsh School of Architecture at Cardiff University. My background's in science and technology policy and innovation studies. I've worked in the area of energy policy and sustainability for the last 20 years.

[9] **Mr Blake**: I'm Chris Blake, from The Green Valleys, which is a community organisation, supporting community energy, and also with Community Energy Wales.

[10] **Alun Ffred Jones**: Diolch yn fawr iawn. Okay, then. Since you were about to embark on something, before I ask the Members to ask questions, if you want to make some introductory remarks, keep them short, but—. David.

[11] **Mr Clubb**: Just to say that the definition of smart energy is quite important to the discussion that we're about to have and one of the conversations that we had earlier, when we were waiting, was that smart

energy isn't necessarily something that's new or innovative, but it's about how you use energy and, of course, the most important thing is being smart with the use of energy. So, I would say that energy reduction is the smartest possible thing that you can discuss when we're talking about energy.

[12] **Professor Eames:** Yes, I'd like to back that really. I'd like to introduce my comments by saying that I'm not sure that the label of smart energy is always particularly helpful to the conversation and that I do feel that there's a lack of a shared understanding of what smart energy actually means and that sometimes it does add to some confusion. But, clearly, the smartest thing you can do with energy is to reduce demand, first of all, and it doesn't matter whether you do that through an innovative piece of electronic control system in your house or through a dumb piece of insulation, actually. The first thing should be about reducing energy demand and then ensuring that energy is supplied sustainably and that that's low-carbon energy and that we ensure that we have a socially just transition to a low-carbon energy system.

[13] **Alun Ffred Jones:** Diolch yn fawr. Chris Blake.

[14] **Mr Blake:** The main thing I'm going to say is I'm not going to put a great emphasis on technology and tomorrow's promises; I'm going to think that we can make changes through organisation and institutions and changing the way things and energy are organised. I don't think we need a technology revolution to be able to do this; I think that we can do it now, without. Technology will help, storage will help, but reorganising the way in which we take responsibility for energy saving, energy distribution and energy generation can bring about some improvements—enormous improvements.

[15] **Alun Ffred Jones:** Obviously, I'll encourage you to answer the questions, but make sure that any statements that you wish to make are made during the coming hour. Julie Morgan.

[16] **Julie Morgan:** Thank you and bore da. You've already started to answer the first question that I was going to put to you, which is: what is the most important thing for Wales to do within its existing powers to accelerate the transition to a clean-energy economy? So, as I say, you have started to answer that already, but could you be more specific, perhaps? Do you want to start, David?

[17] **Mr Clubb:** Yes. I think that the decision not to significantly increase

the requirements for energy efficiency on new buildings and retrofit was a serious error. When I talk to colleagues of mine who are involved in engineering companies, big engineering companies, there was a lot of discussion in 2008 and 2009 about zero carbon housing and how Wales was a leader. They said, 'Of course, our companies criticised the direction of travel because they viewed it as adding a cost, adding a burden, but, as individuals within those companies, we very much enjoyed being the go-to people for our friends in England and Scotland about how to deliver this new technology and how to design these amazing new buildings.' So, by putting us kind of back to where everybody else is in terms of regulation in the UK, I don't think we've done ourselves, our industry, and the people who work in that sector, any favours.

[18] So, we have those existing powers and I would say that we need to be very ambitious in how we implement them and set strong goals for zero carbon housing and then help our own building sector to innovate and to win business on the basis of that because those are skills and products that we can potentially export.

[19] **Julie Morgan:** If I could just follow that up, what about the statements by the big housing builders recently—about how much more expensive it is or is going to be in Wales to build—who obviously have a large share of the market? How do we counter that? How do we cope with that?

[20] **Mr Clubb:** I would say that those statements are ludicrous, because we've got our own research products in Wales that demonstrate the exact opposite: you can produce very high quality, very good insulated houses for not much more than the cost of a standard social house.

[21] **Alun Ffred Jones:** Jeff, did you want to come in on this?

[22] **Jeff Cuthbert:** Yes. Are you actually saying that to the Redrows of this world, for example? Because I heard what their chief executive said on the radio yesterday.

[23] **Mr Clubb:** I don't actually have a lot of time to respond to a lot of the comment around the sector. If I had the time and the opportunity, those are exactly the kind of comments that I would be putting.

[24] **Alun Ffred Jones:** Okay. The same question, I presume—.

[25] **Professor Eames:** If I could perhaps just come in on the point that was—the discussion that was just being made, actually, around house building, I think that we need to recognise that Cardiff is actually projected to be the fastest-growing Core City in the UK over the next 20 to 30 years. We're looking at something like 40,000 houses in Cardiff alone, in terms of new build. That's an important market for UK house builders, and I do think that we have an opportunity to carve out a distinct Welsh approach in terms of energy policy and in terms of sustainability for the built environment more broadly and for our towns and cities. That's about setting challenging standards with a clear vision for the overall goal of sustainability, in line with the Assembly's duty to pursue sustainability. So, I think that we shouldn't be distracted by some of what we hear from the house builders. You know, they will see a market in Cardiff, and, if there's a level playing field for all of those that need to build here and across Wales, then they will build those houses, if there is the demand.

[26] I think that, in terms of the overall vision for energy in Wales, there is a need to develop a stronger, more cohesive vision for energy policy overall in our country and that that vision needs to play an integral part in motivating people across our society and in mobilising resources across our society for transition to a low carbon, sustainable Wales. I think at the moment that we've, to some extent, become too in hock to energy policy developments in Westminster and, quite frankly, energy policy in the UK at a UK level has been a mess for the last 10 years, and we need to carve out a distinctive vision. I think that we started to try and do that some years ago and, to some extent, we've lost our way more recently and we do need a clearer vision for energy in Wales. When you look at European states such as Germany and Denmark that are committing to a 100 per cent renewable future by 2050, I think that we need to look to those sorts of examples rather than to Westminster in how we frame our energy policy.

[27] **Alun Ffred Jones:** I think there are a number of people who are coming in, I presume on this point. Russell then Mick.

[28] **Russell George:** It was picking up on—well, continuing on energy reduction. Is there anything else, besides changing housing standards, that is in the power of the Welsh Government in regard to energy reduction, apart from housing standards?

[29] **Professor Eames:** Could I pick up on that? One of the major research projects I've lead in recent years was a programme called 'Retrofit 2050—re-

engineering the city', a large UK research project funded by the Engineering and Physical Sciences Research Council. As part of that work—a small part of that work—we've looked at, in detail, a comparison between retrofits of existing housing stock in Manchester and in south Wales, in the Cardiff city region. What comes out of that quite strongly is that, actually, Wales has been very progressive and has been a leader through the Arbed programme and its other initiatives in taking forward the retrofit of the existing housing stock. So, I think we should also recognise where we've done things well. I mean, I know that there are criticisms and there have been some problems with Arbed in terms of delivery, but, overall, actually, we've done a very good job in Wales of delivering at scale, in terms of retrofit and building up a supply chain. So, there are things we have done right.

[30] As well as new build, it's very important that we look at the existing housing stock. One of the things about our housing stock is that we have a much larger percentage of hard-to-treat properties than anywhere else in the UK just about, and it's important that we recognise there are significant co-benefits that come from reducing energy demand through improving health, through tackling fuel poverty, and through creating employment, and Arbed's been very successful in doing that, and we need to build on those sorts of initiatives in Wales.

[31] **Russell George:** Is there anything else we can do that's perhaps not within the Welsh Government's remit at the moment, but in potential future powers that the Welsh Government could have that would help—

[32] **Alun Ffred Jones:** We'll come on to future powers in a minute.

[33] **Russell George:** Okay.

[34] **Alun Ffred Jones:** Are you on this point, Mick?

09:45

[35] **Mick Antoniw:** On this point, yes. You say there's obviously been a lot achieved in terms of improving insulation, cavity wall insulation, cladding and all the things like that, but I have to say that there's a lot of evidence now that in actual fact an enormous amount of that money has just been totally wasted and been unnecessary. I look in my constituency, and I have enormous numbers of houses that have had all sorts of money spent on them for this—for insulation, for example, that has not only proven to be

unnecessary, but has proven to be damaging, and that's something that's beginning to appear all around Wales. So, what evidence is there about the success of that? Do you accept some of the criticisms that are beginning to emerge, and that there needs to be a close examination as to whether, in actual fact, we've actually been achieving very much at all, and perhaps have been deluding ourselves as to how this money's been used?

[36] **Professor Eames:** I don't accept that we've been deluding ourselves. I did preface my comments by saying that I recognise there are criticisms and there have been problems with delivery. I think that we also need to recognise that the scale at which the programme has been rolled out is fairly unique in the UK. There are some other examples of large-scale programmes, but there aren't many, and that will inevitably be challenging. I think the important point is that we create a learning culture, where throughout the supply chain we can improve standards and we can learn from our mistakes. But the idea that we should simply do nothing, or that improving the quality of the housing stock that we have across Wales and improving the quality of life for many in our communities—the idea that we can simply turn our back on that and do nothing just isn't credible.

[37] **Mick Antoniw:** I'm not suggesting that, but what would you say are the mistakes?

[38] **Professor Eames:** From some of the evaluations that I've read, there have been clear problems with external wall insulation particularly: problems in terms of understanding and skills necessary to actually apply that technology appropriately. So, a lot of it comes down to fine detailing—getting the guttering right, getting the detailing right around windows and doors—and, if that isn't done properly, then that leads to further problems.

[39] **Alun Ffred Jones:** This is getting a bit away from Julie's initial question. I'll come back to you now, Julie. Did you want to come in on this, Jenny?

[40] **Jenny Rathbone:** Just to balance the picture, the experience in my constituency up in Llanedeyrn has actually been a very positive one, on the whole, and that was because the Mark Group did have very high standards, and knew what they were doing. People's bills have been cut in half, literally—those who could afford to get on to the programme. So I just wondered how we could ensure, given that the Mark Group's now had to go into liquidation as a result of the UK Government, that those high standards—you know, which body do you think ought to be driving forward

the high standards, or how could we ensure that we have those high standards in all future work that we do of this kind? Is it the Construction Industry Training Board or is it—you know, which? How can we do that?

[41] **Professor Eames**: I'm not sure I'm the best person to answer that, to be honest.

[42] **Alun Ffred Jones**: A oeddet ti eisiau dod i mewn ar hwn?

Alun Ffred Jones: Did you want to come in on this?

[43] **Llyr Gruffydd**: Not on energy efficiency, but on energy mix.

[44] **Alun Ffred Jones**: Okay, no; we'll come back to that. Julie, I think your question has—

[45] **Julie Morgan**: Yes, I think that Chris Blake needs a chance to say something.

[46] **Mr Blake**: Just to address a couple of the points, I would have thought, on David's point about energy reduction and standards when you build, isn't that what the Well-being of Future Generations (Wales) Act 2015 is supposed to do? Doesn't that put a requirement on us to—

[47] **Alun Ffred Jones**: That remains to be seen.

[48] **Julie Morgan**: We don't know.

[49] **Mr Blake**: But we have an—. There's existing legislation that could be applied that says, 'Don't take the quick, cheap, easy task now; make a commitment to invest for the long term', because the total cost of ownership of that property is going to be less if it's insulated properly than if its—. So, we have that piece of legislation there.

[50] I would go back to what Malcolm was saying. The Welsh Government needs to set targets—not just targets, but also policy objectives for energy, and I don't think we've done that. We lag so far behind. We don't have to look to Denmark, we just need to look to Scotland, which is well on its way to 100 per cent renewable electricity, and we're so far behind that, I'm not sure—. We don't have specific targets, we don't know whether our objective is just to have—. We don't care if it's foreign-owned and foreign-invested renewable energy, how much of it we're going to have—does it matter if it's

nuclear, does it matter if it's distributed or centralised? Where's the policy? Where's the guidance? If we don't have a policy and a map, how do we know what policy directions to set to get there? And that's something you can do within your existing structures.

[51] The other thing on energy efficiency we haven't mentioned is behaviour change, and I think the energy supply companies—the big six companies—have had an appalling record of getting energy behaviour change and energy saving done. I think it's been a travesty. It's putting the sausage-makers in charge of converting people to vegetarianism. It just doesn't work; it's absurd. I think local supply and—I'm going to say this—community involvement—. I think communities can make behaviour change happen. If you tightly couple smart meters, a local supply and intelligent local tariffs, which are less when the wind turbine is working and when the sun is out, with community involvement to overcome distrust and generate behaviour change, it can make a huge difference to that element. So, yes, insulation is important, but the behaviour change element hasn't been tackled, and I don't think EDF Energy are going to be trusted with the smart meter roll-out, and I don't think they're going to be trusted with behaviour change; it's going to have to be local voices. And it's going to need very smart local tariffs that reflect when your generator is operating—when there's supply and when there's a surplus—which has multiple benefits for grid capacity, generation involvement, acceptance of wind turbines and the rest of it.

[52] **Alun Ffred Jones**: Julie, do you want to come back?

[53] **Julie Morgan**: Just one follow up, really. Malcolm raised the issue of the houses that are going to be built in Cardiff—a huge house building programme in Cardiff, a lot of it in my constituency, and that's going to start fairly soon, really—as soon as the local development plan is agreed, which will probably be by next year. What are we going to do to ensure that those houses aren't going to be built in the way so many modern house are being built? Are the things that you're suggesting going to be quick enough to ensure this?

[54] **Mr Blake**: I don't know. In terms of house building and standards, I can't make a judgment on what powers you've got, need or can do.

[55] **Alun Ffred Jones**: Professor Eames, are you in a position to answer?

[56] **Professor Eames**: Yes. I think it is an urgent problem.

[57] **Julie Morgan**: Yes, it is very urgent.

[58] **Professor Eames**: I think that it relates not just to the building regulations, but I think it relates to the overall design and urban form and master planning in terms of looking at the broader picture in terms of sustainability and energy use. So, reducing the need to travel, reducing lights on cars—all of these are important alongside household energy use.

[59] I think that there are those professionals working within the City of Cardiff Council who are very aware of these issues and would like to do as much as they possibly can. I think it's important that the Assembly Government works as closely as possible with Cardiff and the new city region board to try and deliver new infrastructure and new housing to the highest and most sustainable possible standards.

[60] **Alun Ffred Jones**: But it's down partly—. Outside the building regs, it's down to the local development plan. The local development plan can direct a great deal of what you're talking about—or not, as the case may be.

[61] **Professor Eames**: I recognise that, and that's obviously going to bind the possibilities. But, within the confines of the plan, I think there's still a great deal that can be achieved.

[62] **Alun Ffred Jones**: David.

[63] **Mr Clubb**: The Welsh Government consultation on energy efficiency closed a month and a half ago, I think, and I submitted my comments to that, which were along the same lines as I described earlier—fairly critical of the decisions taken previously. That suggests that the Welsh Government will come out with a new energy efficiency strategy fairly shortly, so I would also suggest that that's the one opportunity that we have within the time frame that you suggest in order to ensure that those standards are significantly raised for the first new swathe of house building in Cardiff.

[64] **Julie Morgan**: Because there will probably be more houses built here than any other part of Wales, so it is very important. Thank you very much.

[65] **Alun Ffred Jones**: Mick, did you want to come in?

[66] **Mick Antoniw**: Just briefly. We obviously have powers in respect of building regulations, and we obviously have powers in respect of planning and certain ancillary matters. Chris, you mentioned that you didn't feel you were confident in terms of talking on some of the powers issues. But, aside from those powers, the things that Chris Blake was talking about in terms of community energy tariffs and so on—all those things are completely outside our powers at the moment. The Wales Bill doesn't provide any relief for us in terms of that broader area, does it?

[67] **Mr Blake**: I disagree; I don't think that's right. The possibility for locals—there are trials of local supply going on in England at the moment. It can be done now. There are probably changes coming up with Ofgem rules that will make that easier in the future. So, there's no reason why municipally owned renewable generators in Wales could not be supplying locally and could not be doing intelligent tariffs, coupling that with behaviour-change examples, to start, for once, to address, perhaps, some fuel poverty issues in relation to renewable and municipal energy generation, which have not ever been tackled or even mentioned. We can't afford to wait for the changes in legislation and powers. In my view, we have to act—lobby for changes in legislation powers, but you've got to get on with the suite you've got now. The ability to do local supply and encourage and support municipal ownership of renewable generation—we can do it now; we're not waiting for anything.

[68] **Mick Antoniw**: But doesn't that require additional powers in respect of things like tariffs, in respect of the grid and so on?

[69] **Mr Blake**: The grid—I don't know. The grid's a separate issue we might come back to. The tariffs—yes, there are challenges with the tariffs. They're going to drive you towards certain types of development and away from others. The municipal sector, I believe, has advantages in terms of—if we can get some cheap borrowing. We have a privileged relationship with some of the state-owned land assets in the country that we could exploit. There are things that, I believe, can still make some of these—. You know, just because the Government is closing down support on the levy control framework and tightening it up doesn't mean to say that we can't find some renewable—. That can't be and shouldn't be the end of renewable generation in Wales.

[70] **Alun Ffred Jones**: Reit, Llyr. **Alun Ffred Jones**: Right, Llyr.

[71] **Llyr Gruffydd**: Clearly, there have been people who feel that the

Government have lacked the strong strategic leadership that's needed, and I just wanted to start, and Chris has, maybe, teased some of these issues out slightly already—. What one thing could the Welsh Government do to signal that, actually, we are serious about renewables in Wales and that is the direction of travel from now on?

[72] **Mr Clubb:** I'm quite happy to start with this one. About a year and a half ago, the First Minister started his strategic energy group—maybe it's close to around two years now. As one of the actions in one of the early meetings for that, I took it upon myself to draft a renewable energy road map for Wales for the group. That took considerable time and effort, unpaid, and that was presented to the group, and the feedback and the outcome of that was precisely zero. So, in the end, after several requests that I could publish it, I just, myself, published it as a discussion document, and that road map showed—well, I came up with a number of recommendations, none of which were taken on, but they included things like a discussion about where we want Wales to be.

[73] As Chris said earlier, we don't know, by 2050, whether we want to be exporting electricity or exporting twice as much electricity as we use, whether we're going to be generating all of our heat from renewables or all of our transport. We've got no idea. There's no strategic vision. It would be very straightforward to work that—to have a suite of pathways that we would be interested in following and then commission somebody to do an analysis of those different pathways and what that meant in terms of carbon output and employment. We haven't got any strategy for renewable heat in Wales.

[74] So, at the moment, what we have is industrial and commercial players in the market that are acting on an ad hoc basis, responsive to changes in UK policy, for example, or to localised issues, but they can't set a path for themselves and for their own businesses to say, 'Okay, by 2050, we know, for sure, that there are going to be x thousand wind turbines and x hundreds of thousands of solar panels.' They can't beat a path in that direction, because they just don't know where it is that we're going. So, I would agree with Chris that, fundamentally, we need to have a road map, and we need some credible analysis of what that would mean on a year-by-year basis, so that businesses have the confidence to invest.

[75] **Alun Ffred Jones:** What was the group you mentioned—was it the strategic energy group?

[76] **Mr Clubb:** Yes, the strategic energy delivery group. It was started by the First Minister, now it's Edwina Hart's.

[77] **Alun Ffred Jones:** That met—. Is that still meeting?

[78] **Mr Clubb:** It's still meeting. It met every six months when the First Minister had the chair, and it meets approximately every six weeks to two months now.

10:00

[79] **Alun Ffred Jones:** And has it produced something, apart from—?

[80] **Mr Clubb:** I had high hopes for it when Mrs Hart took it over because she displayed a lot more direct interest, I would say, in the outcomes, but, sadly, I don't think that we've had a huge amount of outcomes. We've had some policy statements and strong interest in nuclear, but I think it's been lacking, really, in the kind of very long-term vision that we'd hope to see from the Welsh Government.

[81] **Alun Ffred Jones:** Well, apparently, this group was set up on the recommendation of this committee. So, well done, this committee.

[82] **Llyr Gruffydd:** Can I come in just on that point?

[83] **Alun Ffred Jones:** Sorry. Llyr, just to finish off.

[84] **Llyr Gruffydd:** I've noted that there's a link to your paper in the paper that you've submitted, although you do recognise that, obviously, these things can become quite dated because the financial environment or the fiscal environment changes, as it has done of late. That seems to be the response of the Welsh Government. When I ask about targets and these kinds of clear steers, there tends to be a feeling of, 'Well, you know, there are so many elements that are out of our control that, really, if we established targets we wouldn't have real influence over achieving those targets'. Do you recognise that as an issue, or how do you expect the Government to set targets if they don't have the totality of powers to be able to deliver those?

[85] **Mr Clubb:** Yes. This has been the constant rejoinder, and I have some sympathy with that because, to get any project consented you need the consent—the permit—and you need a grid connection and you need the

financing. Clearly, at the moment financing is a massive issue. On some aspects—so, consenting the grid, for example—the Welsh Government doesn't have any powers anyway. So, two out of the three levers are absent, but I don't think that that absolves us from doing the discussion and the thinking about it. One of the things that Rosemary Thomas, the ex-chief planner for the Welsh Government, said yesterday at the conference was just because we don't have the levers to be able to influence all of the things about renewable energy, it doesn't mean that we shouldn't be trying to tackle some of them. So, within the gift of the planning department, they've done something that I think is quite a good piece of legislation, with the planning Act, and they will make a difference as and whenever conditions change. I think that exactly the same should apply to renewable energy policy. We should have a vision. Okay, even if we don't have the levers by 2020, we can be a bit vague about 2020 or 2025, but let's have something that we can bring to the table that says that, at 2050—. I mean, we can all be fairly confident that something's going to happen by then. So, yes, there's some validity to their reluctance, but I would say we need to be far more ambitious.

[86] **Alun Ffred Jones:** Russell, did you want to come in?

[87] **Russell George:** Yes, just on that point. You mentioned that your paper didn't gain much traction. Was that from the First Minister and Edwina Hart, or was that from the rest of the group? I just wasn't clear on that.

[88] **Mr Clubb:** Well, I'm not really clear on that either. It was noted as a document, and then I made some follow-up e-mails and it never really went anywhere.

[89] **Russell George:** All right.

[90] **Alun Ffred Jones:** Okay. Jeff.

[91] **Jeff Cuthbert:** Thank you. I suppose when you referred to sausage makers, Glamorgan sausage makers would be okay for that vegetarian—

[92] **Alun Ffred Jones:** That's an in-joke. [*Laughter.*]

[93] **Jeff Cuthbert:** Yes. You mentioned the provisions of the wellbeing of future generations Act, which, yes, is coming into force in April. The First Minister has now called for people to help to inform what the indicators

should be. Now, I don't want to get semantic over the use of indicators and targets, but are you making it clear to the First Minister, in light of that call, that there should be something firmer, in terms of this field, contained within indicators for the monitoring of the implementation of that Act?

[94] **Mr Clubb:** I haven't yet responded to that, and I think that, in a sense, it would be a bit of a shame if we had to go by proxy via another piece of legislation to say that renewable energy in and of itself would be a marker for future generations. I recognise that that might be one of the approaches that we take. The environment Bill is also another proxy because via carbon dioxide emissions you can do the same.

[95] **Jeff Cuthbert:** Well, I would have thought that it was highly relevant. There is a call there for it when all is said and done.

[96] **Mr Clubb:** Yes, there is, but renewable energy is one part of overall energy. So, making that a totemic part of an indicator for future generations, I'm not sure about. Zero carbon dioxide emissions, I think, can be one, and a pathway to that, but the problem with saying that we need an overall target for renewable energy as a part of future generations is that that still doesn't give us what we need, which is a strategy and a pathway. So, I'll be making comments on the basis of that consultation, but I'm not sure that that's quite the right place to put it.

[97] **Jeff Cuthbert:** Okay.

[98] **Alun Ffred Jones:** William Powell.

[99] **William Powell:** Diolch, Gadeirydd. Mr Clubb made a pretty damning indictment, really, of energy policy over the last few years, and it's clear that we need to up our game. Do you see the future generations commissioner, when he or she is appointed, as having a potential leadership role in this issue to actually bring greater focus and possibly to join the committee that you've spoken of with some frustration to give it some additional edge and add to its potential for good?

[100] **Mr Clubb:** I would say certainly not everything that the Welsh Government has done on energy policy has been bad. So, I don't want to give that impression and we've had some very productive discussions with Carl Sargeant in particular. I think the future generations Act is a real game changer and, for me, that's one of the things that I'm most proud that the

National Assembly has done and the Welsh Government has done, because that will provide leadership in a way that we haven't seen across the UK. It will also provide the private sector—large business, small business and everybody in between—with some kind of indication that there will be demand in certain directions. So, we will be getting those indicators and the local plans will have to show improvement along the direction of those indicators. Businesses up and down Wales will be starting to think, or should be starting to think, about how they can innovate to provide those products and services. So, I think that, yes, that's something that can help. Peter Davies currently sits on the energy group that I've mentioned, so that position, presumably, would still be available.

[101] **William Powell:** One other question that occurred to me a little earlier: Professor Eames was referring to a deficit of skills in terms of installers in terms of energy efficiency and so on, and Mr Clubb's referred to very high level benefits that come from fresh thinking in planning. When it comes to our planning departments up and down the country, is there a training need there in terms of upskilling the front-line planners in terms of the potential that planning has to make a positive contribution in this area? Do you think that's something we should be focusing on?

[102] **Professor Eames:** I'd cast it rather wider than that. First of all, I'd say that my comments in terms of skills in terms of installation of solid wall insulation, I don't think that's—. That's certainly not a problem unique to Wales; I think that's a problem across the industry as a whole in the UK. In fact, we may be, in some senses, ahead of the game, because we're building up experience of trying to roll out mass programmes in that respect.

[103] In terms of your particular question about upskilling planners, I think what we do need to recognise is that innovation to deliver sustainable low-carbon energy isn't simply about bits of kit and about hard engineering, and that many of the problems—. You know, in many cases, we have the kit, but what we don't have is the institutional organisational regulatory frameworks to bring that stuff into mass deployment. So, when we think about innovation, that needs to be in relation to innovative governance, innovative regulatory frameworks and how we adapt market structures, and, yes, planning is an important part of that, but it goes much more—. It's a much broader problem.

[104] **Alun Ffred Jones:** What do we need to do? I mean, many of us attended the SOLCER house; I don't know whether you were involved with that project.

[105] **Professor Eames:** My colleagues in the department led that.

[106] **Alun Ffred Jones:** We were told that it was comparatively cheap—well, not inexpensive, shall we say? It seemed to work, it's fairly roomy—nothing much wrong with it, really. The windows were too small, but that's another issue—[*Laughter.*] Anyway, as you said, we have the technology, so how do we move from where we are, building the usual two-up or three-up, three-down with a garage and a little lawn? How do we move from the old system to a new system? Obviously, it won't be uniform. How do we do that? Do you have any ideas?

[107] **Professor Eames:** Well, I think it does bring us back to the issue of building regulations, to some extent. Even when you're looking at individual buildings, actually, the evidence on innovation and drivers of innovation in the construction industry quite clearly points to the importance of regulation, and it's not a politically very attractive message, often, but, you know, that's what the academic literature says. Actually, regulation has a critical role to play in driving standards in the construction industry. So, if we don't address that, then don't expect things to change.

[108] **Alun Ffred Jones:** But if you phased it in, so that everybody knew it was going to happen and so everybody could prepare, because—. I know, Jeff, you want to come in on skill and the skills issue.

[109] **Professor Eames:** It's setting clear standards, giving industry notice in advance when changes will be coming in, and then sticking to them.

[110] **Alun Ffred Jones:** Did you want to come in on skills?

[111] **Jeff Cuthbert:** Well, a little bit more generally, because, obviously, it's a no-brainer, isn't it, that if we're going to have this future in terms of energy generation, we have to make sure that those working in it have the right level of skills, particularly in terms of your role in the university. Do you feel that higher education and, indeed, further education are as geared up as they ought to be for the provision of those skills?

[112] **Professor Eames:** I think that there have been a number of significant attempts in Wales to develop those sorts of programmes and, in fact, colleagues within the Welsh School of Architecture have played a prominent role in that in relation to the built environment sustainability training and

Welsh energy sector training programmes. Are we doing enough in terms of the long-term transformation of this sector? Probably not. Is that for want of trying? I don't think so.

[113] There is one particular issue that we haven't come to yet that relates to this, to some extent, in terms of the role of research and academia, which I did want to highlight, and that's the question about the need for a comprehensive survey of patterns of energy consumption and of Wales's renewable energy potential, because that's an issue that we did—myself and colleagues actually submitted relevant evidence to this committee, some four years ago, in your inquiry on energy policy and planning in Wales at that time, where we argued that one of the problems facing policy makers in Wales was the inadequacy of the evidence base.

[114] At that time, what we had seen previously was an attempt to set a number of very ambitious long-term targets, but without a clear evidence base on how they could be delivered. Perhaps what we've seen in the interim is a rolling-back from a willingness to set ambitious targets, because of concerns about powers to deliver. I can see that there is a problem there, but I do think that, in terms of transformational change in these large, complex systems, as a society, we do need ambitious long-term targets. So, we need to see what the challenge is, going forward 50 years for Wales, and what sort of vision of a society we have that we can all work towards and we can mobilise support for across society. But there is a problem in terms of the evidence base to look at how we deliver that in the shorter term, and, at the moment—I mean, what we argued for in our submission then was that there was a need for regional-scale integrated energy modelling that would allow us to understand both the shape of demand and how that may be reduced across Wales, but also what the potential was for different energy technologies to deliver against that demand or future export. We still don't have the capacity to do that in Wales. We don't have an integrated regional-scale model of the energy system for Wales, and I think that's unfortunate.

[115] **Alun Ffred Jones:** Okay—. I'm sorry.

[116] **Jeff Cuthbert:** I just wonder what David and Chris—[*Inaudible.*]

[117] **Mr Clubb:** I mean, I think we've got the capacity; it's just nobody's done it—nobody's been paid to do it. Those models exist, and they're very—you know, it's not rocket science to run through them and produce some outputs. Like MARKAL and EnergyPLAN—

[118] **Professor Eames:** They don't—. There isn't a Welsh model. I mean, they will produce outputs for the UK as a whole, but we don't have a model for Wales, for the Welsh energy system, that links demand and supply and future potential supply.

10:15

[119] **Mr Clubb:** Okay.

[120] **Mr Blake:** I think Malcolm's right. We've been talking about the need for a strategy, and for some targets—targets that are conditional on the powers. They can't be targets that we're going to be held to account to, but having the evidence base, making that a proper piece of work that looks at energy use now, models various scenarios going forward, how we can better meet that, and what our goals are—that's the work that really urgently needs to be done.

[121] **Alun Ffred Jones:** Who should be doing that?

[122] **Mr Blake:** Well, I imagine it needs to be commissioned by the Government. It'll be a combination of industry professionals, academics and other organisations who can put it together. It would take a year or so, but we need to start now.

[123] **Alun Ffred Jones:** Llyr.

[124] **Llyr Gruffydd:** Yes. Gareth Wyn Jones, in his paper, suggests there should be some sort of comprehensive survey of Wales's physical renewable energy potential. I presume that you'd see that very much fitting into that kind of process.

[125] **Mr Blake:** That would be part of that.

[126] **Professor Eames:** Yes, we started doing some of that work with funding we had through the Low Carbon Research Institute over the last few years. So, for example, we developed a solar atlas, looking at the availability of solar potential across Wales, and we produced an energy atlas, looking at energy demand and looking at energy supply, as a snapshot of energy supply for 2011, and the Welsh Government subsequently commissioned a baseline study of renewable energy, which built on quite a lot of the sources that we'd

collected together in the energy atlas that we produced in 2011. But, really, that's a fragment of the evidence base, and to date we haven't been able to find funding to produce an integrated model and to keep that up to date in a way that would actually allow it to inform policy going forward.

[127] **Llyr Gruffydd**: How expensive would that be? I've no idea. Would it be tens of millions, or a couple of million?

[128] **Professor Eames**: No. It's probably a couple of million. At the moment, we probably would need to recruit some additional capacity into Wales. Some of the people that we've brought in through the Low Carbon Research Institute have subsequently left to work elsewhere. So, for example, one of the analysts who undertook this work with me now is working for the European Commission and doing similar work for them, so we need to build up capacity to do that in Wales, and it's probably a case of a couple of million over three years.

[129] **Alun Ffred Jones**: The energy atlas is a public document, presumably.

[130] **Professor Eames**: Yes. We provided a copy of it to you in previous evidence, but that was a snapshot. You need the capacity both to build those systems but then actually to update them with data annually. So, setting a system up would probably cost a couple of million, and then a much lower—. Actually keeping that up to date going forward would be a lot less.

[131] **Alun Ffred Jones**: Technology changes, of course. Three years ago I met a German industrialist who was very interested in solar parks, and he showed me the areas in Wales he was interested in, and they were confined to south Wales, basically down to Pembrokeshire, and a little bit of the Llŷn peninsula. They're building them all over the place now in north Wales, because, presumably, the technology has moved forward and it doesn't really matter where you put them.

[132] **Professor Eames**: Well, I also think the scale at which the maps of solar availability—the scale at which they were available three or four years ago was pretty poor, actually, for Wales. So, actually the detailed knowledge at a kilometre square, if you like, didn't exist, and we've developed methodologies for how you look at that both at a regional scale in Wales and at an urban scale, to give you a much more fine-grained and accurate understanding of the availability.

[133] **Alun Ffred Jones:** Janet Haworth.

[134] **Janet Haworth:** Yes, I want to go back to housing, and particularly to talk to Chris about his ideas about organisational change, because it seems to me that, for a long time now, if we look at Scandinavia, there are building methods that are quicker, and certainly more energy efficient. If we look at the units, if we look at houses, their use of energy, their use of water, and how much each unit uses, then this is clearly an area that we should be working in. But we have had problems, have we not, in the past with our financial institutions being prepared to mortgage more innovative building methodology? So, I think that's a question for Chris, really, around the organisation.

[135] On the cost, clearly if you can put these properties up quicker, because of the manufacturing methods, then that has to equal a cost saving, because time is money. So, I'm interested in all of that.

[136] I'm not a doomster about the Wales Bill, but then I wouldn't be. I think it's a draft, and that is an opener for discussion. It's only through discussion that a Bill becomes an Act, and hopefully becomes a good and workable Act. So, I think, as far as the Wales Bill is concerned, the conversation has started, and it's for us all to make a contribution to that, and it doesn't have to be something that holds us back.

[137] So, that's what really interests me, because I think, for years now, we've had this to-ing and fro-ing about the methodology on building houses. The other thing I would very much like to see, picking up on Chris's comments about engaging with people at the local level: I despair when I look at some of the social housing we have, and I'm not—

[138] **Alun Ffred Jones:** You may despair, but—

[139] **Janet Haworth:** Yes, and I'm not surprised we have the social problems that emanate from them. Why are we not working with communities and asking them what kind of housing they want? Do they want a lawn? They might not want a lawn. What design? They have no input into this design, and I think by working with the local community around a housing development, we would get some better solutions as well as meeting some of these requirements for more efficient energy use.

[140] **Mr Blake:** My instincts are to agree with you, but I'm not an expert on

social housing design, financing or planning, so changing that is not something I can comment on. I think we can work with the people in the housing stock we've got at the moment to reduce energy consumption. There's a lot that can be done with behaviour change and ways of operating within the houses. I think that can be done, but I'm not the person to answer questions on social housing design.

[141] **Janet Haworth**: So, do you think there is mileage to be got from retrofitting? We have some very depressed areas in our urban settlements, and costs involved in regeneration, but is there mileage to be got from regenerating those areas, again in conversation with the local people, regarding what they would like to see?

[142] **Mr Blake**: My guess is it probably needs to be done in an integrated way. So, no, we're not going to take down all the old houses and build new ones. It's not going to happen, so we're going to have to retrofit. We're going to have to do that. You want to retrofit in conjunction with training, behaviour change, smart meters, local generation, sensitive tariffs, as I was saying earlier. You want that package put together. Just putting in retrofit isn't enough. Just doing behaviour change isn't enough. You need to mix those; the whole element needs to be brought together.

[143] **Janet Haworth**: Linking back to the future generations Bill, some of the design we see in housing estates, you know, asks for trouble. No-one's thought about how people move about these areas, what they actually need, or where they need it, and I would like to see a lot more of that happening.

[144] **Professor Eames**: Can I just comment on that?

[145] **Alun Ffred Jones**: Yes.

[146] **Professor Eames**: I think we should also recognise that, actually, in Wales we have a great deal of expertise in those areas, in Cardiff University, both in the school of architecture and the design research unit there, and in the school of city and regional planning. We actually have a great deal of expertise in community-focused design and those sorts of approaches. So, in terms of a knowledge base to draw on, I think there's a lot there and a lot of willingness on the part of academics within those institutions to engage with community-oriented processes.

[147] **Janet Haworth**: Do we still have a battle with the financial institutions,

who seem to be quite happy in Europe to mortgage and loan on these innovative buildings, as they've been doing for 20 or 30 years now? Do we still have a battle here with our financial institutions?

[148] **Professor Eames:** Yes. It comes back to the point I made earlier about the need for financial governance and financial and institutional innovation, because, yes, there are very significant differences between the way in which financial institutions operate in Germany, for example, and the role of their—. Sorry, I'm trying to remember the acronym for the state bank there that underwrites a lot of energy efficiency retrofits.

[149] **Alun Ffred Jones:** We visited one of those banks when we were in Freiburg, didn't we?

[150] **Mr Simpson:** KfW.

[151] **Professor Eames:** Yes, KfW.

[152] **Alun Ffred Jones:** Llyr, oeddet ti eisiau dod i mewn?

Alun Ffred Jones: Llyr, did you want to come in?

[153] **Llyr Gruffydd:** I want to talk about community energy, if I may. Clearly, there have been initiatives and programmes, albeit at quite a modest scale and level, to grow and encourage community energy projects. So, what needs to be done? What are the things that need to be there in order for us to realise what I believe is a huge, huge potential and would have that transformative effect you talked about earlier?

[154] **Mr Blake:** I think if we're going to—. Especially with what's been happening in Westminster, the need is for us to—. We've got to do things at scale, and I think too many community energy projects have been at too small a scale. They have great benefit. I mean, having a small village with a 50 KW hydro scheme or 200 KW photovoltaics—. It's very important that it brings in—it has been bringing in income, and there's nothing against that. But if we're going to make a difference, I think community—and I'm going to use community and municipal energy together—and socially owned energy needs to be operating at the megawatt scale. I think it needs to be operating—. And I'm going to keep coming back to this point: it needs to be coming back and generating and selling locally. If you had a municipal generator with community interest and a community role that it was playing, whose primary function was not to sell as many units as it can to its people,

but also has other social goals such as reducing fuel poverty, reducing energy consumption, minimising the amount of energy that has to be imported into the area from other sources—if you make those goals, you go about things in a different way, and you will achieve a lot of those advantages.

[155] I think that needs to be done. That needs to be done in a joined-up way. It's not something that individual small community groups can do; it needs Government policy. It needs intention, it needs local authorities, but working in partnership together to deliver some—

[156] **Alun Ffred Jones:** One of the problems with community groups, they tell me very often, is that they have to reinvent the wheel every time. Every time one starts up, they go through all this issue of how they set up, then the consents have to be explained and then they find out that it's a long process. And then there's a lot of energy or effort wasted on setting those up, and sometimes, of course, they end up with a brick wall. It seems to me that there's something around that area that needs to be smoothed.

[157] **Mr Blake:** That is true. I mean, there are a lot of support mechanisms to help those communities go through it, and the mechanism and the empowerment of some of those communities—. I've been supporting some communities in the north of the Rhondda. Some of those projects may not succeed, but, actually, there have still been some benefits in that process. I would agree with you: I think we need a more professional and considered approach to municipal energy ownership in Wales. That needs professionals involved, that needs strategic planning, it needs looking at the resources, it needs looking at the opportunities, looking at the land and assets that are in public ownership, coming up with plans to develop that, and using industry experts to make the smart decisions and make some quite ruthless decisions. We're investing a lot of effort and public money in some of these projects; they need to be in the right places, and that focus needs to be there, and it doesn't exist at the moment.

[158] There's a tragedy here, which I think is that, under the support, or the billions of pounds that the levy control framework has taken from consumers' bills to support renewable energy, I don't know the figure, but it's certainly less than 1 per cent—a lot less than 1 per cent—of that money and support that has ended up in community and municipally owned schemes. Nearly all of that is in private development schemes that are usually foreign-owned and foreign-financed. The economic benefits of those

billions that have been taken off everyone's bills in Wales have not ended up in Wales, and that economic benefit has not been part of the criteria. That support under the levy control framework is coming to an end, so it's spilt milk—there's a missed opportunity here—but one of my goals for this energy vision and strategy we've got going forward is ownership, and it needs to be professionally done, and economic recycling, and keeping that value within Wales is vitally important and one of the planks of that strategy.

10:30

[159] **Alun Ffred Jones**: Llyr.

[160] **Llyr Gruffydd**: I agree with everything that you've said, and I agree with what needs to be done, but the question that we're grappling with is how do we do it, and who does it? So, would you see, then, that there's a role for the Government, either directly, or through a newly created agency, or through existing bodies, to put boots on the ground, working with communities, or industry experts, and technical specialisms being placed within local authorities? You know, what are the dynamics?

[161] **Mr Blake**: My experience tells me that it can't be done at the local authority level. They've been trying and they've failed. They don't have the will, the cash or the expertise to do it. So, I think it probably has to be done at a national level, but in partnership with local authorities and in partnership with communities. So, my hunch—. I haven't thought this through, but I would have thought that an agency—quite a small one—would be a good place to start.

[162] **Alun Ffred Jones**: David, and then Jenny and—oh, suddenly everybody. Right. David.

[163] **Mr Clubb**: I used to work in the energy agency sector, so I have sympathy for anybody who's trying to develop a community energy project, because it's much more difficult than it is for a commercial operator. So, for that reason, if you want to have similar levels of success, you either need to put the same amount of resources in, from the public sector, or the community sector somehow, or change the nature of the game, so that the planning system rewards those projects that come from the community sector. So, we did have some discussion with Carl Sargeant about a presumed concept for community energy projects, but that didn't go anywhere at the time of the Planning (Wales) Act 2015, but I think that would

be one interesting way, potentially, to think about how that might be levelled.

[164] I think an energy agency is an interesting suggestion, and it's one that I have mentioned within the strategic energy group, which, again, didn't go particularly far, but the experiences in Austria—upper Austria in particular—and other European countries demonstrate that these can be game changers in the way that they enable people to interact, and the way that they can support community energy projects. I would just say, if I may, in defence of the private sector, Chris, that foreign ownership of assets in Wales is not restricted to energy. As Calvin Jones makes very clear, this is an issue about Wales being poor and not having capital, and most of our assets are private sector assets, and all sorts of infrastructure, are owned by foreign companies. So, I would say that there are issues there about what Welsh Government could do to start incentivising more Welsh-owned assets, but I don't think that it's just energy that's the issue.

[165] **Alun Ffred Jones**: Jenny, are you on this?

[166] **Jenny Rathbone**: If local authorities have neither the will, the money nor the expertise, on what scale, then, would we be considering doing it? Would we be doing it in terms of a town, or at a local authority, geographical level? What is it that makes most sense, or what's the optimal size of a population to be doing it on?

[167] **Mr Blake**: I suppose what I've got in mind is an agency that is a catalyst. It's a catalyst that is going to bring in the professional expertise, that's working within this energy strategy that we've got, and that's got the ability to look at the best sites and the best opportunities nationally. It's no good picking a town and saying, 'Right, we will do our energy development here' and then it not having the right resources or the best capacity. So, let's look nationally, let's bring in the expertise, let's work in partnership with the private sector, let's work in partnership with municipal land owners and other asset owners, let's find the best sites, let's develop those sites professionally and well, and have them in joint ventures between the private sector and local authorities and communities that are affected by those groups, and have it integrated—not just to have generation to the grid at 5p a unit and forget about it, but to have it selling to the local community. Let's have it selling electricity to the housing association, have these smart tariffs and have these local involvements. It's that integrated model that we need, but if we don't have the assets that we own do to that, it won't come about.

[168] **Jenny Rathbone:** Okay. But how are we going to get around the fact that Ofgem demands that whatever energy is generated is sold to the grid?

[169] **Mr Blake:** Ofgem will tell you straight that that is not the case—that they don't require it and that they are all for diversity and they are all for different approaches. It's very difficult at the moment, but it is—. Okay, I'm plucking out pilots that are happening at the moment, and the newest is the launch of Piclo—which is supported by Good Energy—a couple of weeks ago, which is matching individual generators with individual, single, large consumers in a one-to-one relationship, with a price set by the generator. That's a trial, a six-month trial, which is operating now. The National Trust are selling electricity to the Eden Project through that mechanism.

[170] There is Energy Local, which is doing the same thing, but selling individual, locally generated electricity to consumers with flexible tariffs. That's a trial that's happening in England at the moment and we're looking to bring a trial of that to Wales. That is all happening within the current regulatory framework. So, I think a lot can be done right now.

[171] **Jenny Rathbone:** So, it's a myth then.

[172] **Mr Blake:** Well, it's not a myth; it has been very difficult. The Ofgem rules and the energy supply regulations have been a nightmare—you have to have one of the big six partners, who haven't really been very co-operative. The last thing—

[173] **Jenny Rathbone:** You have to have one of the big six partners.

[174] **Mr Blake:** You have to have them basically underwriting the arrangements, because of load balancing and all the other things. But Co-operative Energy and Good Energy are actively exploring these opportunities.

[175] **Alun Ffred Jones:** I've got a number of names down now and I'm just conscious of the time, so be brief and I've got one question then from Alan at the end. So, Jeff to begin with.

[176] **Jeff Cuthbert:** Yes. Linked to this, I'm returning again to the wellbeing of future generations Act, which, as you know, has seven goals at its heart, and will put new public service boards on a statutory basis. In terms of local government, I accept your point, probably the existing local authorities don't

have expertise in terms of helping to develop and direct community energy projects, but, undoubtedly, there will be fewer local authorities as we go on—we don't know exactly the shape in Wales, but there will be fewer—and, of course, they will be organised with other relevant public bodies on the public service boards. So, do you think that there could be scope here under the provisions of this particular Act to actually move forward in this way and that it's incumbent on all of us—yourselves included—to lobby for that to happen?

[177] **Alun Ffred Jones**: I think that's a political question, really.

[178] **Mr Blake**: I suppose I think we need to get on with something now. Maybe we need a municipal energy agency set up, with a short life, to create example projects, to invest in some projects and schemes. Maybe the public service boards in the future can take on that role, but they're going to be years away.

[179] **Jeff Cuthbert**: No.

[180] **Mr Blake**: If we sit back until they're—. Well, until they're up and running so that they've got their—. Until energy comes to the top of their agenda, until they've got a commitment to do it, until they've got the expertise to do it, it will be years. So, let's act now and let's get some projects up and running, which can then act as exemplars for public service boards to implement in their regions.

[181] **Jeff Cuthbert**: That's fine; I mean, I've got no problem with doing something now, but you do think that, in due course, the public service boards could adopt this?

[182] **Mr Blake**: Quite possibly. They could adopt it, yes, but I would be worried by the implied pause.

[183] **Alun Ffred Jones**: Mick Antoniw.

[184] **Mick Antoniw**: I'm just interested in the points that you made about an agency or whatever. I've been involved with the attempted Treforest hydro project and it is almost doomed to failure—it's almost impossible to drive through from a genuine community group, and there you have a community, you have the university there, which could be a potential buyer and so on. So, you'd actually see this as really being something that would actually almost

drive it forward, working in partnership with the community, rather than it—.

[185] **Mr Blake:** I agree with you; I'm aware of the Treforest problems. One of the difficulties that some community groups have is that the community groups can't move location. Renewable developers can. Renewable developers aren't tied—. They get a great momentum behind a project and have strong leaders and a strong commitment from the community and they will back a project. I'm not going to make a judgment on whether Treforest should or shouldn't go ahead, or should have been—. But, because they are in that community, and that is their weir and that is the site, they will push that regardless. There's an advantage in being above that and being able to say, actually, for reasons that are—let's say they are—valid, that isn't the best site to develop; there are other ones elsewhere. Communities have that limitation in that they are tied to a geography. If that geography isn't the best for development, they'll still keep going at it. And, sometimes, as a private renewable developer will do—. They're not even tied to a community, not tied to Wales, and can go anywhere, and that's what's going to be happening. If Wales doesn't make noises about a commitment to a renewable energy future, the professionals will be in Norway, Sweden, Venezuela next year, and we won't have the skills or the expertise to take it forward.

[186] **Alun Ffred Jones:** Thank you. William.

[187] **William Powell:** Thank you, Chair. With all the constraints that there are on grid connection and the need to build up scale that you've referred to, what is the role of energy parks such as we've seen developed, to some extent, in Ynys Môn and Pembrokeshire? Do you think that they would be something that should be developed more widely in Wales?

[188] **Mr Clubb:** If I can answer this, I'm a big supporter of the concept of co-locating a lot of different energy generating technologies in the same place. There's another very related idea of a wind hub, which is based on a wave hub idea, but where you also locate storage, and so, in effect a wave hub. Mid Wales is a particular problem for grid, and east Wales, as Chris wrote about in an article. So, if you can obviate the need for that grid upgrade, then you take six years away from the development of a project and you get things that can happen right now. So, I think that there's logic behind it, and there's the ability to drive projects forward rather more quickly than you might have to if you were relying just on grid development. I think that Welsh Government is working with groups on a number of projects on this type of concept, but I don't have any further information about the

nature of those projects. I think it's an idea whose time is coming fairly soon.

[189] **William Powell:** And can that combine terrestrial and marine environments also?

[190] **Mr Clubb:** The marine environment's probably a bit more complex, because the resource there tends not to be co-located. You may not get tidal stream, for example, in the same place as a good wave resource. So, it's probable that you'll just get one type of development there. But, certainly, Pen y Cymoedd is a good example of a wind project where they are also looking at deploying solar. As it's in a forestry area, you might be looking at deploying innovative gasification technology for biomass. So, because the grid for exporting the wind electricity isn't used 100 per cent all the time, you can fill in the gaps, basically, with other technologies. So, it's a very cost-effective way of making best use of the grid. It just complicates things, because you're not just dealing then with one technology and one application. I know that Natural Resources Wales has done some very good work in encouraging developers to come forward with multiple technologies on one site.

[191] **William Powell:** That's helpful. Thank you.

[192] **Alun Ffred Jones:** Okay. We're coming to the end of our session, and Alan is going to finish things off with a very difficult question.

[193] **Mr Simpson:** Well, if you might, Chair, just allow me to follow up something that you also raised in relation to communities. Can I just pitch one at Chris? Because both you and Llyr raised this question about complexity. Chris, would you accept that it's worth distinguishing between development and de-risking in the way that—? Malcom's point about the role of KfW in Germany; it de-risks the process by making a lot of this reinventing of the wheel unnecessary. If the bank couldn't do that, it is perfectly feasible for a Government to de-risk, so that communities didn't have to reinvent the wheel. So, would you accept that de-risking can be separated from development?

[194] **Mr Blake:** Yes. Absolutely.

[195] **Mr Simpson:** In terms of the broader picture, though, several of the different strands that have come together, whether it's to do with generation, whether it's to do with energy efficiency savings, whether it's to do with

transport or water, seem to require an umbrella, and some of you seem to have suggested that the Environment (Wales) Bill that's going through actually might be such an umbrella. If it was, in the context of Paris, then there need to be carbon targets in the Bill. If you were in a position to say what the targets should be, what would each of you put in the Bill as an annual or a 2020 or decadal targets, as an obligatory target reduction that had to be put in that Bill? It seems to me that regulations and mechanisms—develop the mechanisms—would follow a duty, so where would you pitch it?

[196] **Mr Clubb**: I'd use the evidence that's available. So, attempting to meet the 2 degrees warming and the UK's fair share of that—that would be the absolute minimum that you'd need—and then have that requirement on all parts of the economy. Of course, you can't oblige the private sector in the same way as you can the public sector. But, still, that should be the bare-minimum baseline.

10:45

[197] **Mr Simpson**: Chair, I just wanted to come in, because France is actually doing this. Denmark is doing this. They're saying you have to meet carbon-reduction obligations—private sector as well as the public sector. In France, you can't now put a building up that doesn't either have a solar roof or a nature roof. Denmark won't consider planning applications that are based on fossil fuels. All of this is around defined carbon-reduction targets. So, what is the carbon target that you'd like to see in that environment Bill?

[198] **Mr Clubb**: Like I say, I would base it on the evidence, in order to meet the best possible outcome of what's happening at the moment through existing climate change. But I would say that—. I fully take the point; I think we can do a huge amount with requiring, in planning applications, integrated renewable energy. But I'd be interested to know about the sanctions on a private-sector company. For example, somebody delivering flowers or whatever, if their target is 5 per cent carbon dioxide reduction a year, what's the sanction if they fail that?

[199] **Mr Simpson**: I think this is—. I have to say, Chair, I think this is ducking the putting down of a benchmark—

[200] **Alun Ffred Jones**: Are you looking for a figure?

[201] **Mr Simpson**: I'm looking for a figure, because it seems to me, David,

the danger is we can get lots of phrases and warm words, and, if that's as much as is going to get put in the Bill, it's a waste of time. So, you're here with an opportunity to tell the committee what you would like to see as a recommended figure that goes in. So, what would it be? You won't get many chances to say.

[202] **Mr Clubb**: Zero by 2050.

[203] **Mr Simpson**: Zero by 2050.

[204] **Mr Blake**: Sounds good. And it needs to be—. It has got to be—. We're talking about the need for a strategy and some targets and some goals. I can't tell you what that figure is—maybe that's the right one—but it needs to be in there; it needs to be central. And it needs to be understood. To shy away from setting targets because we might get criticised in the future because we didn't meet it, because we didn't have all the powers—that is a feeble and weak excuse. We have to set the targets and we have to explain that we don't have all the powers to deliver it, but we're going to do our best and we're going to identify—. If we can't meet it, then let's find out what powers we need. If we don't start with a target and a goal, then we're going to get nowhere—which is, unfortunately, pretty much where we've got to.

[205] **Professor Eames**: I think that there are some complicated issues about how you separate out the Welsh energy system from the rest of the UK in terms of setting targets, and also a heap of issues around devolved powers and what we can influence and what we can't. I wouldn't disagree with the idea of zero carbon by 2050. I'd add to that that we should also look at targets for renewable generation, and that we should be aiming to be net exporter of renewable energy, and we that should look very hard at the timescales over which we should set those targets to drive development.

[206] **Alun Ffred Jones**: Well, you haven't got your answer, Alan, but we'll have to conclude matters there. If you think of a figure between now and tomorrow, perhaps you can send it on.

[207] **Professor Eames**: What I would say is that I would stress that point about needing not just a zero carbon target, but actually a target for renewable energy production.

[208] **Alun Ffred Jones**: Diolch yn fawr iawn. May I thank the three of you for coming in this morning and for helping us in our deliberations? Obviously,

we'll send you a transcript for you to check for accuracy. But, for the time being, diolch yn fawr iawn—thank you very much.

[209] We'll just have a couple of minutes, then we'll break quickly.

Gohiriwyd y cyfarfod rhwng 10:49 a 11:10.
The meeting adjourned between 10:49 and 11:10.

Ymchwiliad i 'Dyfodol Ynni Callach i Gymru?'
Inquiry into 'A Smarter Energy Future for Wales?'

[210] **Alun Ffred Jones**: Now, we are in public session, obviously. [*Interruption.*] Pardon?

[211] **Russell George**: The private session was 'in camera'.

[212] **Mr Vaughan**: That means 'in private'. It's Latin, I think.

[213] **Alun Ffred Jones**: It is.

[214] **Russell**: Oh, is it? I didn't know that.

[215] **Mr Vaughan**: [*Inaudible.*]

[216] **Russell George**: [*Inaudible.*] [*Laughter.*]

[217] **Alun Ffred Jones**: 'In camera' is 'in private'. Now, we are in open session. [*Laughter.*] Right, we are now in session and we welcome our two witnesses—two guests. I will ask them, when they've settled down, to introduce themselves. You don't need to touch the mikes during the session. They will come on magically.

[218] May I welcome you here? Thank you for attending the evidence session as part of our inquiry into a smarter energy future for Wales. So, can I ask both of you just to introduce yourselves, in terms of your names and who you represent?

[219] **Mr Turvey**: Yes. I'm Nigel Turvey. I'm the design and development manager at Western Power Distribution. In that role, I have a strong lead on our engineering policies, the development of our extra-high-voltage networks, and I also deal with a number of our commercial policies and

things like the use of system tariffs.

[220] **Alun Ffred Jones**: Diolch yn fawr. Stephen.

[221] **Mr Stewart**: Good morning and thank you for inviting us along. My name is Stephen Stewart and I'm the distribution director for the Manweb area. That covers Merseyside, Cheshire and north Wales. I have directorate responsibilities for all network activities in that area—both operations connections and delivery programmes. That includes the 444,000 customers we have in north Wales.

[222] **Alun Ffred Jones**: Thank you very much. Right, well, Members will ask their questions, and we're kicking off with Jenny Rathbone.

[223] **Jenny Rathbone**: Good morning. Turning to Mr Turvey's paper, just looking at page 2 and the grid information that you've given us, could you just talk us through how much of the energy currently distributed by you is from renewables? It appears to be roughly half. Is that correct?

[224] **Mr Turvey**: I've actually got some numbers in terms of the amount of energy. The table I've put in that note is about the capacity connected. So, for example, solar—

[225] **Jenny Rathbone**: On page 2.

[226] **Mr Turvey**: Yes, sorry. On page 2, the table there is about the capacity that's been connected. So, for example, with a photovoltaic cell, although you might have connected 10 kW of PV, clearly, it doesn't produce energy overnight. Therefore, it produces a lot less energy than is actually the connected capacity. If you look at it from the viewpoint of the amount of energy that comes out of those renewable projects, we currently have—. In terms of those renewable projects that are already connected or are committed to connect, they would produce energy that would represent about 37 per cent of the energy usage in south Wales.

[227] **Jenny Rathbone**: So, about 37 per cent is renewable energy.

[228] **Mr Turvey**: It's not actually connected at the present time. That's stuff that is both connected and committed to be connected.

[229] **Jenny Rathbone**: Okay. What have we got at the moment, then?

[230] **Mr Turvey:** It's about 7 per cent at the moment.

[231] **Jenny Rathbone:** Seven per cent?

[232] **Mr Turvey:** Connected in south Wales—yes.

[233] **Jenny Rathbone:** That's obviously extremely low. Why is it so low?

[234] **Mr Turvey:** It's just the speed at which projects have progressed. As I say, there are a lot of projects that have accepted offers for connection to the network. We understand they are progressing towards their connection. Once connected, that would represent 37 per cent of the energy.

[235] **Jenny Rathbone:** Okay. So, once—. Could you talk us through why it's not possible to prioritise renewables over other, dirty sources of energy, as long as, obviously, you've got the connections? You say that 37 per cent is what you're hoping for.

[236] **Mr Turvey:** Yes.

[237] **Jenny Rathbone:** How are we going to increase on that?

11:15

[238] **Mr Turvey:** In terms of being able to prioritise, we're covered by a licensing regime, which is administered by our regulator, Ofgem. We are not allowed to have undue discrimination between different parties. So, if we get a gas-fired power station or an energy-from-waste-type station, and a photovoltaic station, we're not allowed to discriminate between the connection offer we make to them, and so the priority really becomes the order in which they apply for connection.

[239] **Jenny Rathbone:** Can you just explain what you mean by 'undue discrimination'? Surely, there must be some discrimination.

[240] **Mr Turvey:** Sorry, yes. The reason I emphasised the 'undue' was, for example, when you get down to community energy, whilst we are not allowed to discriminate in terms of the priority we give them for access to the network, we are allowed to discriminate in terms of how we provide information to them. So, for example, community energy groups need

different information to commercial developers. So, we're allowed to enhance the information that we give to community energy, we're allowed to do a lot more work with them, and that wouldn't be considered as discrimination between customer classes in terms of being undue. So, it really is about that balance of when it is helpful as opposed to actually skewing the market, I think, which is probably, perhaps, the best way of trying to describe it in terms of how that undue test is given.

[241] **Jenny Rathbone**: Okay. What customers are struggling to understand is why we would use dirty energy if there is clean energy available.

[242] **Mr Turvey**: We have a duty to facilitate the connection of anyone who seeks to connect to the network. So, we are not able to make a judgment on the social benefit of what's connecting.

[243] **Jenny Rathbone**: Okay, but that's because if you're—. I guess I'm struggling here. You're getting the energy from the grid, or you're sending it back to the grid.

[244] **Mr Turvey**: Well, at the moment, it's coming from distributed generation, which is connected to our network, and the balance comes down from the grid.

[245] **Jenny Rathbone**: Okay.

[246] **Alun Ffred Jones**: Do you have any carbon reduction obligations in place?

[247] **Mr Turvey**: Not directly on us, no. Clearly, we have some obligations to try and reduce system losses. So, that is a constant balancing act of how we—

[248] **Alun Ffred Jones**: Sorry—system losses?

[249] **Mr Turvey**: In terms of when you distribute energy across a wire it naturally heats up to a certain extent as that passes. That heat is dissipated to the air, and that is a loss to the system. We have obligations to look at ways of trying to reduce those system losses by the way we use our network and the way we configure our network.

[250] **Alun Ffred Jones**: Okay. Julie Morgan.

[251] **Julie Morgan:** Just following up from Jenny's questions, I'm very surprised that the figure is only 7 per cent. I wanted to ask: what is your relationship with the 30 per cent that you say are coming on-stream? I mean, how definite are those projects, and do you keep in touch with them, giving them information? Are you implying that you encourage them? What is your relationship?

[252] **Mr Turvey:** Well, our relationship is a contractual one. What's actually happened for them to get to that point is: they have applied to us for a connection to the network, we have offered them terms for that connection, including what it would cost for that connection, they've accepted those terms, and we're now working through a process of, really, exchanging information as they move towards the point where they can be connected. They may still be finalising their planning consents or finalising their financial structures to actually facilitate that process.

[253] **Julie Morgan:** So, you anticipate that that 30 per cent will actually happen—that it's sure.

[254] **Mr Turvey:** I wouldn't say it's sure. Some of those projects will drop out. Some of them will fail for reasons of planning issues, or will fail for reasons of financing the project, or perhaps even some of them have got to the point in the cycle where the changes in subsidy regimes, which have come out in more recent times, mean that they won't be able to get themselves sorted out before those subsidies change, and hence they will end up dropping out of that process.

[255] **Alun Ffred Jones:** So, the 30 per cent is very indefinite, then.

[256] **Mr Turvey:** It is, yes. It's probably on the high side in terms of the amount that we'll—

[257] **Julie Morgan:** I just wanted to put that on the record because I thought it was a very optimistic sort of—.

[258] **Alun Ffred Jones:** Sorry—on this point, Jeff?

[259] **Jeff Cuthbert:** Yes, I just want clarity. I want to make sure that I heard you correctly. In terms of that table that Jenny referred to, on page 2, I think I make the same assumption that, under the heading of 'Connected', it's 37

per cent—I haven't added up the figures, but I'll take your word for it—of the total generation, but in fact, in terms of what is actually connected, it's only 7 per cent. That's right, is it?

[260] **Mr Turvey**: Yes, in terms of energy, there's a difference. [*Interruption.*] Sorry—. The difference here is between the capacity, in other words, what the maximum output a particular generator could produce and the actual energy it does produce. Because if you had a solar PV plant with—. This is all here; it's in the capacity of mega-volt ampere. So, if you had 1 MVA of capacity, if it could produce energy the whole year round, 24/7, then it would produce a huge amount of energy. The reality is the PV plant only produces maximum energy during some of the summer periods; overnight, obviously nothing, and during the winter a much lower amount. So, the amount of energy you get per capacity is much lower for solar PV than it is for others. So, in terms of the energy produced, it's down at the 7 per cent, but the capacity connected will be much higher than that in percentage terms.

[261] **Jeff Cuthbert**: Okay. So, all of this is actually connected, but not necessarily generating that volume of electricity.

[262] **Mr Turvey**: That's right, yes.

[263] **Jeff Cuthbert**: Right. Okay. So, the heading of 'Connected' is the right heading, because I—

[264] **Mr Turvey**: No, no—that is the capacity that is connected to the network.

[265] **Jeff Cuthbert**: That's the capacity, because you said some of these projects will fail, so that made me think, 'Ah. Some of them are not actually up and running yet', but that's not the case.

[266] **Mr Turvey**: No. The ones in that particular column are actually connected to the network.

[267] **Jeff Cuthbert**: So, they all exist, but there's more that could come on-line.

[268] **Mr Turvey**: That's right, yes.

[269] **Jeff Cuthbert**: Alright.

[270] **Alun Ffred Jones:** Llyr.

[271] **Llyr Gruffydd:** I just wanted to ask you whether you could tell us about any innovative approaches that you've adopted to make it easier for community renewables, for example, to connect to the grid.

[272] **Mr Turvey:** I think the main thing we've been trying to do is actually give information, because we actually find that there's quite a big information gap for community projects. They're being run by extremely enthusiastic groups that are willing to put huge amounts of their own time into it, but they lack knowledge; they have huge constraints on their time to actually achieve these projects. So, they need actually need information provided to them in a form that they can easily understand; they can communicate with us easily over it; get away from all the technical jargon and just find what they need to do; and what information we really need from them to allow that project to connect.

[273] We've really focused on that. We've done that in two ways. We do hold a number of sessions that have been across WPD, where we invite community groups to come and talk to us and we give them a few examples of what needs to be done. We also worked with a company that is based in the south-west—Regen SW. They have a big network of contacts with community groups and they helped us develop a guide for community groups, which is on our website; we distribute it as widely as we can, and we are working with the rest of the distribution industry to try and turn that into a national document, so that it's available to all to help explain the process that community groups need to go through to get connected to the grid.

[274] **Alun Ffred Jones:** Mr Stewart, could you respond to that question as well about your attitude towards community groups?

[275] **Mr Stewart:** Yes. Two points I would come back to: from a technology—. I'll pick up on the first point you made: do we look at technology? Yes, we do. I have a team of 10 people focusing on the Manweb area looking at what technology we can bring on-stream to help facilitate more capacity on the network. I can give you some particular examples. We have been able to push more megawatts down the line in north Wales, which is our 132 kV line, and we were able to bring some technology on. Where you get wind, it actually helps you to reduce the heat of the conductors, so what we're able to do is put some monitoring on that line, which is able, then,

when it does get windy, which, actually, is then when the turbines are going to turn, to push more megawatts down that line, which is about 20 MW. So, that is an example of what you look at, and as part of the Iberdrola group, we will go right around the world to see what technology—. I've got numerous examples, but I think that is a typical example that we do.

[276] When we talk about communities, in the Clwyd valley, we do look at whether we can bring communities together. Because you may have certain constituents of yours who are our customers, who may be coming on one at a time, and we will go into the community and actually try and bring all of what they want to do together and then group that, and it will become more economical for them and assist them with that. So, that's one example that we have done, and what we've also been looking at from an innovator perspective is—we call it quote plus, and I'll explain what that is, because, sometimes, we don't have enough capacity for, maybe, what the local developer wants. I look at it like if you were buying a house off a site plan. So, if you went to buy a house, you'd get a cost for a house with no garage. So, we can give them that cost, we'll give them a cost for a house plus a double garage, that's maybe what they want, but we, maybe, can do it more economically without giving them a garage, and we, maybe, give them a triple garage. So, we will give them three costs, rather than just one cost, which allows us to get through that process a wee bit quicker. It allows them to do their business case and their economics.

[277] **Jenny Rathbone:** So, what opportunities are there, in areas where you say you haven't got capacity, or you're at peak capacity, for local producers to then be selling direct to local consumers?

[278] **Mr Stewart:** Can I wind back, first, and I'll come back to that? My demand from my customers in Wales is about 800 MW, so that's the peak demand that we've got to be able to cater for. How much have I got connected? It's 700 MW. So, it's a pretty high number we have in Wales. So, we, over the last 10 years, have been dealing with these issues. I've got 700 MW connected, against the maximum demand of 800 MW. I've also got another 700 MW on top of that—700 MW contracted. So, we are getting to the point where we've actually got more generation, between what I've got connected and contracted than what I actually require in north Wales. That doesn't include what I've also got in the pipeline of enquiries coming through.

[279] So, we have pushed the network at the lower voltages to where we

don't have a lot of capacity left. If I had to look at it in Wales, in mid Wales, I've got very limited capacity, in the north-east, I have some capacity, and in the north-west of Wales, in my area, I've got limited capacity.

[280] **Alun Ffred Jones**: So, all that means that it's very difficult and expensive to connect any local schemes, be they private or community schemes.

[281] **Mr Stewart**: What I would say is what we do, and I think you'll see, we have what we call heat maps, and that's—

[282] **Alun Ffred Jones**: Do we have a copy of that? Have you provided us—?

[283] **Mr Stewart**: I didn't, but what I'll do is—. I could provide you a copy—

[284] **Alun Ffred Jones**: Please do, yes, we'd very grateful for that. Thank you.

[285] **Mr Stewart**: It's a very simple red-amber-green scenario. We provide these within our local areas, and that allows customers who want to connect to say, 'Well, where is the best place to connect?' So, where it's green, we have capacity; where it's amber, there is some; and where it's red, we need to do some work to create some capacity. So, we do that. We also have—within our organisation, we've recently gone to being a more geographic organisation, where we're connecting a lot better now in the communities. So, we can do that. But, over and above that, there is investment needed over the next eight years, and we've just entered our—

[286] **Alun Ffred Jones**: Can we come back to investment, as I think it's an issue we—well, I'd like to ask both of you, but I think there may be other relevant questions? Have you finished, Llyr, on your point? William, and then Mick, and then Russell.

[287] **William Powell**: Diolch, Gadeirydd. I wanted to ask you abound the issue of resilience of the distribution network. What other particular constraints apply in terms of the resilience of the network that apply to both of your companies?

[288] **Mr Turvey**: In terms of resilience, probably over the last 20 years, we've done a huge amount of work improving the resilience of the network. That goes from better tree management through to our maintenance

regimes, in terms of how we look at our lines, and if I actually look at, if you like, the performance of the network in south Wales, back in the early 1990s, the average customer would see a loss of supply of about 212 minutes per annum. Last year, they would see an average loss of supply of 36 minutes. So, there's been a huge change in both the internal culture in terms of how we approach problems, when problems occur on the network, or when we have faults in terms of our response times, the equipment we use and the amount of investment we've put in, both in vegetation management, to make sure trees don't grow into lines, and also the maintenance of those lines, in ensuring they are as resilient as they can be. All I can really say is that the performance you see in south Wales is as good as, if not slightly better at times, than what people see in central London, and yet we have a very rural network in south Wales compared to what's in central London.

11:30

[289] **Alun Ffred Jones:** Thank you. I'm not trying to stop you. Our interests lie elsewhere, but I suppose, Stephen, you'd like to say how wonderful you are as well in north Wales. [*Laughter.*]

[290] **Mr Stewart:** Without a doubt. But I think when you talk about resilience, I always look at storms. That's when customers really want their power to stay on. Nobody wants their power to go off. The stats that we have over a 15-year period, we have invested heavily to ensure that we do the best we can for our customers. Some stats I could give you: between a storm in 1998 and the spring of 2013, when we did see a big storm in Wales, we were able to compare investment between two comparable storms over that 15-year period, and on the high voltage network we saw a 50 per cent reduction between the two storms. So, with the storm 15 years later, we reduced what we'd have seen 15 years before by 50 per cent, and on the low voltage, which is into the villages, there was an 84 per cent reduction. So, the investment that we are doing—we are building heavier lines, tree cutting, and putting new technology on—has worked, and we know it's worked.

[291] But to give you another example of resilience, in the spring of 2013 we were able to use one of the windfarms in north Wales, between Connah's Quay and Bangor, where we actually had some problems with the transmission line that was going north, and we were able to use the capacity that was able to be generated from one of the windfarms to keep us going until we actually managed to get the circuits back in. It was luck, because the wind was blowing, but we got the circuit back in, and we only had an hour to

spare. The wind then died. There are examples there of when wind generation can actually help, but the wind needs to blow to help, and you can't rely on it all the time.

[292] **Alun Ffred Jones**: William.

[293] **William Powell**: To what extent has undergrounding played a part in the resilience strategy? I know that it's obviously used in terms of mitigation in landscape situations, but does it play a part also in resilience building?

[294] **Mr Stewart**: It certainly does. It has its place. It's not the answer—it's not the complete answer, but where it's appropriate, yes. But we have found that, if you build an overhead line to the right standard, with the mitigation around it—where you have no vegetation—you can get the same performance from that as you can get from an underground network.

[295] **Alun Ffred Jones**: I want to emphasise that this session is not about how tough and reliable the service from these two wonderful corporations is. We are looking at the future, and a smarter future in terms of energy consumption. Mick.

[296] **Mick Antoniw**: I have a very short question on this unfulfilled capacity point. Presumably it's part of your future planning, future work, et cetera. Do you do some sort of evaluation as to why there is that amount of unfulfilled capacity? Do you have any sort of formal evaluation process as to why that is happening, or is it basically just experience and anecdotal evidence? Is there anything that would benefit us, to be able to evaluate why there is such an amount of unfulfilled capacity?

[297] **Mr Turvey**: Oh, I see—in terms of connected distributor generation. It's very difficult for us in terms of seeing what's happening in the market. It's very much driven by subsidy regimes, the renewable market at the moment. We do see it come in—this is the best way to describe it—waves of activity as different subsidy regimes are brought in, or are announced that they're going to close. We very much saw a huge explosion in the amount of photovoltaic that's been coming on to the network, and that's almost beginning to tail off. There's a slight hiatus at the moment, which is really a subsidy issue. Whether that will come back, we're not entirely sure. There are certainly reductions in the technology in that area, and we're certainly hearing from some of the developers that very large-scale photovoltaic may well be at grid parity already. So we may yet see a continuation of that trend

in the connection of those plants despite the change in some of the subsidy regimes.

[298] **Alun Ffred Jones:** Okay. Russell, you indicated.

[299] **Russell George:** I wanted to just ask how you facilitate perhaps smaller energy project groups in one area coming together, because they might not know about each other's schemes. You might have projects of different energy types, and they're not talking to each other, because they don't know about each other, as opposed to a larger development where it might be the same company that's got two different projects, or competing companies that are talking to each other to facilitate speaking to you directly to reduce their costs. But how do you facilitate those smaller groups? Do you facilitate them? Do you help to support them in speaking to each other?

[300] **Mr Turvey:** There are two things we have tried to do—and I have to say that it has had limited success. One of the problems we actually have is confidentiality of information that's given to us.

[301] **Russell George:** That's what I was thinking about.

[302] **Mr Turvey:** So, if someone enquires about connecting to our network, we can't pass their details out to anyone else interested in working with this group. That is covered by confidentiality. What we have done is we've put a facility on our network, where people who are interested in saying, 'I'm trying to build a project in this area, is there anyone else who would like to collaborate in terms of the potential network upgrade that is needed', then we're happy to publish that information on our website for them, to allow them to get visibility. So, that's one aspect that we're trying to tackle it with.

[303] The other aspect—and this, perhaps, has been more prevalent in the south-west than it has in south Wales—is Regen SW actually have produced what they call their grid collaboration service, and they try and act as a broker. You often find that these organisations are willing to talk to their almost trade-type associations more, and they're trying to act as a broker, seeing if there are groups that can come together, and then approach us with that group, to say, 'Is there something you can do to help this group together?'

[304] **Alun Ffred Jones:** Can I interrupt there—and I'll come back to you now? Mr Stewart, you said that you had actually brought these groups together in

Dyffryn Clwyd; how are you able to do that without breaking this confidentiality clause?

[305] **Mr Stewart:** What we did was that we did it under our initiative. We did it similarly to what we've done with Energy Island on Anglesey, where there is an initiative that is a Government initiative, so we're able to get around that, and they're able to collaborate on Energy Island; they bring that together for us, and we can then respond to that. We've done something similar in the Clwyd valley. That's how we've got around that.

[306] **Alun Ffred Jones:** Thank you. Sorry, Russell.

[307] **Russell George:** A similar question, but do you have a similar structure on your website that you can point projects to as well?

[308] **Mr Stewart:** Yes. I think we've got a similar set-up. We've got these initiatives going, but also I think what we have done over the last 12 months is we've restructured, and we've actually got more of a focus into the communities. We've now come up with two new districts within Wales and, within that, we do open sessions in the communities and we do what we call 'connection', open days, once a quarter, where the community can come along to our office and discuss any issues they have face to face.

[309] **Russell George:** And I suppose if a community—. Often, some of these community projects go through a process and they're not viable in the end and they fall, unfortunately, but if that is the case, then that obviously may then have a knock-on effect on another project, if they're potentially working together to reduce those costs. How do you accommodate that, if you can?

[310] **Mr Stewart:** We would always look at how we can do that. I think part of it is to go around a co-quote plus, where we try to give some options, but that's inevitable. If you have a group of generators and one falls out, hopefully it wouldn't be material enough to stop the project, but those costs would need to be shared in the infrastructure costs, reinforcement costs that might be incurred. They'd need to be shared, then, with the remainder.

[311] **Alun Ffred Jones:** Jeff Cuthbert.

[312] **Jeff Cuthbert:** If I may, with your permission, Chair, you made the point that we're talking about the future; can I move to a different—?

[313] **Alun Ffred Jones**: Unless there's somebody else on this point. Okay, go on.

[314] **Jeff Cuthbert**: All right. Returning to your table, under 'Generation Type', you list there, amongst the number that you have, hydro, tidal and wave power. Now, you'll be aware, I'm sure, that there's major consideration being given to generating electricity through tidal power. There's the Swansea bay lagoon that's proposed, which could well lead to further tidal lagoons at Cardiff and Newport, and you mentioned Energy Island, and there's a lot of work being done, maybe jointly with the Irish Government, in terms of exploiting the Irish sea for tidal power. How well equipped are you two as companies to deal with, perhaps, a significant increase of electricity generated by tidal power?

[315] **Mr Turvey**: In terms of the projects that are going on associated with the Severn estuary and the tidal lagoons and barrage projects in that area, the vast majority of those are of a size that they will actually be connecting to the national grid, rather than to our network. So, we haven't had a lot of contact with those organisations. We do actually have contact with smaller groups that are looking particularly at demonstration projects, or some of the tidal flow projects.

[316] In terms of the onshore works, we are equipped to deal with the connection works associated with that. The amount of energy will depend really on the constraints we have on the network: the network constraints apply equally to bringing it in from a wave resource as they do from a wind resource or a solar resource.

[317] **Jeff Cuthbert**: So, perhaps my question is better directed to National Grid.

[318] **Mr Turvey**: If you're talking about the major lagoon projects, I think it probably is, but, certainly, we have had some experience of marine projects trying to connect to the network. I don't think that connection to the network has been the major issue for them. I think some of the technology issues associated with those marine projects have been more of a challenge for them.

[319] **Alun Ffred Jones**: Jenny Rathbone.

[320] **Jenny Rathbone**: I want to come back to the—. I think one of the things

we're going to need, if it's possible to give us, is a map of what type of energy is being used at any different time of the year. So, in the summer there'll be a lot more photovoltaics, in the winter less. The map you've given us is just capacity, rather than actual usage.

[321] **Mr Turvey**: Yes. We can certainly produce—

[322] **Jenny Rathbone**: On a monthly basis, or something.

[323] **Mr Turvey**: Yes. We can produce some charts that show the amount of output you see at different months from different technology types.

[324] **Jenny Rathbone**: That would be really useful. I suppose the other thing I really want to understand is how many independent distribution network operators are operating within your designated areas.

[325] **Mr Turvey**: I don't have the precise number to hand, but we certainly have quite a lot of IDNO activity. It's mainly by about two large companies that own—

[326] **Jenny Rathbone**: What are they called?

[327] **Mr Turvey**: Sorry?

[328] **Jenny Rathbone**: What are they called?

[329] **Mr Turvey**: One is under the parent group of GTC, and the other one is Energetics, and they're probably the major IDNO providers. There are also, in this whole area of competition in network provision, a very large number of what are called 'independent connection providers'. The difference between the two is that an IDNO actually builds a network, which is connected to ours, and then continues to own and operate it long term; whereas what an ICP does is it helps with the construction of that network to start with, and then we adopt it for its long-term operation and maintenance.

[330] **Jenny Rathbone**: Okay, so sticking with the IDNO model, is that the sort of model that could be developed by municipalities?

[331] **Mr Turvey**: Yes, I see no reason—. Certainly, when the Olympic Games came to London, I'm aware that there was a separate IDNO company and licence applied for to manage the network within the Olympic village, and

that was actually done as an IDNO network at the time.

[332] **Jenny Rathbone:** Okay, but if municipalities wanted to become generators of electricity, they'd be able to set up their own IDNO, which would be—

[333] **Mr Turvey:** I'm not aware of any restriction that would stop them—

[334] **Jenny Rathbone:** Okay, that's very useful.

[335] **Mr Turvey:** But, that's probably more of a question for Ofgem—they're the licensing authority that could actually grant the licences.

[336] **Jenny Rathbone:** Okay, so the reason that GTC and Energetics are connecting with you is because they want to have the comfort of extra generation were they to require it.

[337] **Mr Turvey:** No; the vast majority of IDNO networks are just to connect either new housing estates or new business estates. So, most of them are actually demand projects; very few of them have generation on them, in terms of IDNO networks.

[338] **Jenny Rathbone:** Okay, but there's nothing, as far as you're aware, in the regulations that wouldn't permit them to be both.

[339] **Mr Turvey:** No, there isn't.

[340] **Alun Ffred Jones:** Llyr.

[341] **Llyr Gruffydd:** One of the big bottlenecks, as we know, is that community renewable projects can't get connections because it's extortionate to build. But, the capacity issue, I think, is an important one because what we have at the moment is a situation where, potentially, maybe two large energy companies have bagged the capacity in terms of committed capacity, which means that a very modest community project can't get that space on the network, unless of course they end up paying for it.

11:45

[342] Now, I'm just wondering, to what extent—and you may not want to comment—there's an element of speculative seeking of commitments around

the capacity. You could have larger companies thinking that, 'Longer term, we may want to do something here, but if we allow others to get in, and get that capacity, then obviously it won't be there for us'. I'd imagine that being a danger. Do you have ways of guarding against that kind of practice?

[343] **Mr Turvey:** It's not just a danger. There is definitely a degree of speculative activity out there. You often find that even some of the larger companies may not have the finance to develop more than one or two projects, but will apply for several because they're trying to understand which one works best for them. There are several things we've attempted to do. This comes down to how you manage that process and how you try to establish which ones are speculative applications as early as possible. One of the things we introduced, nearly a couple of years ago now, was that we actually put milestones in the connection offers that we give to people, so that they have a certain period of time to get their planning consent sorted, then they need to start construction works and actually complete. And, if they fail to meet those milestones, we have the ability to withdraw that contract from them and actually release that capacity to others. So, we've tried to introduce that to try and say, 'Well, we can't stop people making a speculative application, but we can time-limit how long they hold on to it for.'

[344] **Llyr Gruffydd:** And are those milestones and criteria different for large energy projects, compared to maybe smaller community renewable schemes?

[345] **Mr Turvey:** No, we actually apply the same milestones to all project types. The only ones we do extend slightly longer timescales to are very large projects connecting to the very high voltages, because they do take longer to get the system sorted out and planning and such like. So, they end up with slightly longer milestones in their offers than the smaller projects do, but all small projects, whoever they are, whether they're commercial developers or community projects, have the same milestones.

[346] **Llyr Gruffydd:** One clear proposal or ask that's been regularly raised obviously in this context is that renewables, and/or community renewables particularly, are given priority access in that kind of situation. If the rules were changed to allow that to happen, is that something that you could quite easily adopt in terms of your practices?

[347] **Mr Turvey:** Provided there's a clear definition of what a community project is, so that we could identify that, then, yes, there's no problem at all

in being able to prioritise, where capacity is available, who it gets allocated to first.

[348] **Alun Ffred Jones:** Can I play devil's advocate? Your companies actually sell electricity; that's your core business.

[349] **Mr Turvey:** No, we don't. Western Power owns the distribution network; we actually manage the asset. We don't buy or sell energy at all, nor generate it.

[350] **Alun Ffred Jones:** But you do sell electricity and you produce electricity.

[351] **Mr Stewart:** The Scottish Power group is part of Iberdrola Group; that is correct. My division is segregated from the retail business, which is a separate division and does generate and supply. I'm a segregated business through the regulation, and all I do is similar to what has been described by Nigel.

[352] **Alun Ffred Jones:** You may be segregated in the same way that BT is segregated from Outreach, but, basically, you're part of the same group, and that's what you do: you produce electricity; you sell it; and you distribute it as well, along the networks.

[353] **Mr Stewart:** The Scottish Power group do that, but my direct responsibilities are—

[354] **Alun Ffred Jones:** I'm not accusing of you of anything now. [*Laughter.*] Surely, selling less electricity is against the interest of your group, and allowing local schemes to produce electricity is also against the interest of Scottish Power, and all the other major—

[355] **Mr Stewart:** No, I would say the opposite. We've got a duty of care as part of the regulatory environment to protect current customers and future customers, and I am scrutinised by my regulator for every pound I spend: that it's the most efficient pound for both the current customers and future customers. And that is our focus.

[356] **Alun Ffred Jones:** I'm sure you do your work diligently and honestly, with honour, and effectively. All I'm saying is that in terms of Scottish Power as a company, selling less electricity is not a good idea, and certainly getting

other producers in, be they local or whatever, is surely also against their interest, no?

[357] **Mr Stewart:** Today, I'm here to talk about the infrastructure and renewables and, in part, my role is to make sure that I, as I said, provide the best cost and the most efficient cost for my current customers and my future customers. We do not take that part you've said into any of our considerations and any of the plans that we do.

[358] **Alun Ffred Jones:** But in terms of the distribution of electricity, does the fact that you have potentially—. You do have large numbers of individual households producing electricity from photovoltaics, and indeed local private companies or community companies also producing some electricity and feeding it into the network. Doesn't that actually make life difficult for you?

[359] **Mr Stewart:** No, it doesn't, and I think we should go back, as there are just a couple of statistics I'll give you there. As I said at the start, I've got 800 MW of demand and we've got 700 MW on through distribution generation so far—that's how much I've got connected, so that's a very high percentage—plus another 700 MW ready to come on contracted, plus on top of that what's also in the pipeline.

[360] **Alun Ffred Jones:** Can you explain that in simpler terms to lay people like us? Say that again. You've got 800—

[361] **Mr Stewart:** The maximum demand, so the coldest night I may have, I need 800 MW in my part of Wales. For the windfarm, solar and whatever else I've got connected—and this is outwith the large windfarms, and I'll talk about numbers in a minute—I've got 700 MW connected. So, I've got 700 MW divided by 800 MW, which is probably 80 per cent. So, 80 per cent—

[362] **Mr Simpson:** Of clean energy?

[363] **Mr Stewart:** Of clean energy that I can connect. It's a very good success story—it's a good news story for north Wales and it's what we've been able to do over the last 10 years. But also on top of that 700 MW, I've got another 700 MW commercially contracted—okay, we're still to get planning permission, but we are obliged to provide that and we've got plans in place to do that. But, also, on top of that 700 MW plus 700 MW, I've got a pipeline of activity coming in. But, if you look at the number of generators, to respond to that question—and these are large generators, which are over a 1

MW—I've got 127. So, I've got a number of large generators, but I've got tens of thousands of small generators, because you've got to think of my 444,000 customers—every one of those customers can be a generator and I've got tens of thousands of those. We see applications coming in—. Around 2009, there were about 900 applications over the year; we are now seeing 14,000 a year. So, we've gone from probably about 18 a week to probably 300 a week just now. So, we're dealing with it and we're not restricting it. So, we actually welcome it.

[364] **Alun Ffred Jones**: Is it the same happy story in south Wales?

[365] **Mr Turvey**: Yes. Perhaps I can just say a little bit about incentives. There was obviously a concern about whether there was an incentive for us about where energy comes from. In terms of the way we get our income—the decision on how much money we're allowed to recover—that is not driven by the amount of energy going over the network. What happens in the process is that Ofgem look at our business plan and say how much investment we need to make and how much it's going to cost to operate the network. They go through a fairly tough process of challenging that and getting that down to the lowest number they believe is practicable. Then they say, 'Well, okay, you can recover that amount of money', and that is delinked from the amount of the energy going over the network. So, we have no incentive to either have more energy going over the network or less energy going over the network. Our incentive is to invest as efficiently as we can and to be able to demonstrate that to the regulator: that the investments we've made have been appropriate and well used. So, that's really where the incentive comes from.

[366] **Alun Ffred Jones**: Are you purely a distributive company?

[367] **Mr Turvey**: Sorry?

[368] **Alun Ffred Jones**: Are you purely a distribute company?

[369] **Mr Turvey**: We are, yes. We own the networks in south Wales, the south-west, and the east and the west midlands.

[370] **Alun Ffred Jones**: Alan, did you want to come in?

[371] **Mr Simpson**: Yes. So, are you saying that, if, for instance, Ofgem were to say to Wales, 'Either we will change the regulatory framework or Wales

could have its own Ofgem', and that it set annual carbon reduction targets or demanded reduction targets, in the same way as they have in parts of the USA, you would be completely comfortable within that sort of framework, because your whole business model is not dependent on energy sales?

[372] **Mr Turvey:** That's right, yes. The business model wouldn't cause us a concern. Clearly, the degree of targets and the achievability of them might, but the actual model of having that concept of being regulated in that way wouldn't cause us a concern.

[373] **Mr Simpson:** Stephen, is that the same for you?

[374] **Mr Stewart:** I would leave you experts to find the regulatory models we'd operate in Wales.

[375] **Mr Simpson:** But you could—. If that was the decision, your business model would be able to accommodate that?

[376] **Mr Stewart:** Our business model would work for what is the benefit to the customer. How the regulatory framework would work in Wales as compared to England and Scotland I think we would leave to your good selves.

[377] **Mr Simpson:** Okay. There are two other, more specific questions. Across the EU at the moment, there are a reported 6,400 smart cities initiatives. Where would you point to examples in Wales that the committee should look to to draw some of the lessons that have been learnt about what smart cities would look like here?

[378] **Mr Turvey:** I think it's quite difficult to actually define a smart city, because, whilst the energy network is clearly an integral part of that in terms of how you properly integrate the generation sources that are available within cities, or close to cities, with the usage of energy, the smart city concept really goes right into the transport system, the public transport system, and how to integrate the whole lot together. So, I think, as a distributor, we have, certainly, a strong role to play in that, in terms of being able to work with the city to understand what development is needed of the electricity network to facilitate what they're trying to achieve, but I don't think we're central to leading that process, because I think there are so many inputs to it.

[379] **Mr Stewart:** From my perspective, or our perspective, on smart cities, we have two smart cities within my division. One is within my area, which is Liverpool, and the other one's in Scotland, called Glasgow. So, they are the two smart cities. We did offer up six, and we got two. There are another two on top of that that we would have wanted, which would have been, in the Wales area, the Deeside area and Anglesey, and they weren't accepted. But I think, from my perspective, something like Wrexham and Bangor would be appropriate in my area, because I think we can do some learning, particularly in Liverpool where we've worked very closely with the council on things like electric vehicles and taxis—very simple, but very smart—and I think we could adopt that type of technology in initiatives that we are seeing across—.

[380] **Mr Simpson:** The European Commissioner has just recently said that they're completely rethinking, or redesigning, the smart cities initiative. I was just struck by the quote from the commissioner, which says, if I can just pitch into it—I'm sorry; that'll teach me to tap on the board at the wrong time—that they—. I'll find it. The problem is that the existing grid infrastructure is completely 'malconfigured', because it doesn't connect to the delivery of integrated services—transport, domestic consumption, industrial and commercial, fibre optics to manage and balance—and that is the shape of the future that the European Commission is going to be prioritising. Now, that may suit what you were saying in terms of where it was possible for that to develop in Wales, but I just want to know, if this is where the EU Commission's thinking is going, and the European smart cities movement is moving there, where would the committee look in Wales to find examples of that happening here and now?

[381] **Mr Stewart:** I'm not familiar with the report, but I don't think we have, in my opinion, a smart city in my area. I think we've got some very good examples on the Energy Island. I think that's a very good initiative and I think it's one area that we should look at, but, a smart city—I don't see it. We have got smart metering, which we're about to roll out, which starts next year and that'll be quite an aggressive programme for four years. But what I'm picking up from what you're saying, without knowing the detail of the report, I don't see anything like that going on in my area within Wales.

12:00

[382] **Mr Simpson:** Can I just give you the quote from the Commission? It says

[383] ‘Currently, all urban infrastructure including water, electricity, gas, waste, transportation, heating, and others have been built independently of one another. But to achieve real efficiency gains and make our cities more sustainable, we need to connect them so that they complement each other. Integrating and linking up energy, transport, water, waste, and ICT will create environmental and social impacts through resource efficiency, better air quality, better waste management, development of new skills in the population and other benefits.’

[384] What I don’t understand is, if that’s the intellectual framework that the EU Commission sees the future being shaped around, and there are 6,400 cities across Europe that, in one way or another, are already some way down that path, why are we not able to identify any towns or cities of any scale across the whole of Wales as part of that game? It seems to me that you, as the neutral holders of the system, if you’re not dependent on catering for the producer needs of the power stations, why are you not able to sit here in front of us and say, ‘Now you need to look at this, and we’ll be doing that, and here’s our partnerships here’, so that Wales is part of the game, and is not left-over after it?

[385] **Mr Turvey:** I think what is happening is parts of that are being developed—the elements like demand-side response, which is part of that process, in terms of how you integrate energy usage in a city with what is able to be provided to it easily. So, there are lots of trials and processes going on, trying to develop that demand-side response process. I think we are behind in some respects, compared to some parts of Europe where they’ve moved forward quicker on this. But I think we are beginning to catch up in terms of the fact there are a lot of projects ongoing, looking at that demand-side response, or working with local authorities in terms of how we can actually better integrate the information we have with what they’re trying to achieve. But, I think, as that quote highlighted, it’s not just electricity, it is also all the other services. So, unfortunately, I do think the city authorities themselves are going to have quite a lead role in actually changing themselves into a smart city.

[386] **Alun Ffred Jones:** Mr Stewart, you mentioned that Liverpool designated itself as a smart city?

[387] **Mr Stewart:** No, you were asked to submit a plan as part of it, and it was selected as part of the regulatory framework. So, Liverpool was selected as a smart city.

[388] **Alun Ffred Jones**: Can you give us an example of what is going on there? You mentioned taxis.

[389] **Mr Stewart**: The best one I can give you is the taxis one, where we have been able to help and assist to get the demand in electric vehicles et cetera. But, there's a lot more going on and I can give you further details. We can send you those.

[390] **Alun Ffred Jones**: It could be useful to know what's going on as an example. Jenny.

[391] **Jenny Rathbone**: Who did you actually submit it too? Was it to the Department of Energy and Climate Change or Ofgem or to—?

[392] **Mr Stewart**: My belief was that it was to Ofgem, but can I come back and give you clarity around that?

[393] **Jenny Rathbone**: Because I suppose what would be really interesting would be to know on what basis the other two in north Wales were turned down and why it would appear that Western Power Distribution didn't submit any. You didn't apply at all.

[394] **Mr Turvey**: I think we helped support bids for both Cardiff and Bristol, but a large part of that was support. Bristol, I think, is moving forward in the smart city area.

[395] **Jenny Rathbone**: But, Cardiff, at the moment, is—

[396] **Alun Ffred Jones**: If you have any information about Bristol and what's happening from your point of view, it would be useful for us, just to get the feel of what is achievable and what you are trying to achieve. At least it would give us an indication. Janet.

[397] **Janet Haworth**: You mentioned the relationship with municipalities, local government, county councils, and so on. What do you think is needed to drive that relationship forward? You've described yourselves as one of the partners in that. Who else needs to get involved, do you think?

[398] **Mr Turvey**: Well, I think there's a very large element of—. There are going to need to be a lot of communication systems put in to actually make

smart cities happen. It's not just electricity networks. It's also communication networks. If you're going to manage a city in terms of demand-side response, or in terms of vehicle charging for electric vehicles, you actually need to understand what's going on at these various points in the network.

[399] **Janet Haworth**: Yes.

[400] **Mr Turvey**: So, fully integrating the communications network with that is a very key one as well.

[401] **Janet Haworth**: That's an interesting challenge, isn't it?

[402] **Mr Turvey**: Yes. Some of that can be done by some of the other telecoms providers, and some of it will inevitably be the BT Openreach-type solutions.

[403] **Janet Haworth**: So, the BT Openreach telecom providers.

[404] **Mr Turvey**: Yes.

[405] **Janet Haworth**: There seems to be a bit of a battle going on at the moment between the delivery of IT systems through fibre-optic cables directly to the person who needs it, or whether that delivery comes via a copper cable, or whether that cable is providing what they call the synchronisation of up-and-down data. When we experience these failures in our computers, which you wouldn't want if you were delivering integrated services, would you—?

[406] **Mr Turvey**: No.

[407] **Janet Haworth**: You would not want this to happen. Are you saying we would need to ensure that we were using the most up-to-date technology—you know, fibre-optic cable, futureproofed, and none of this copper stuff?

[408] **Mr Turvey**: Well, I think it depends on how you design the system. It's the degree of redundancy you have to build in. The more concerned you are about the reliability of communication networks, the more redundancy you have to build in, or the more resource you have to put in at one end or the other to make sure that it will cope with temporary loss of communication. So, it's really that balance as to the cost of getting that communication system in and the reliability of it, against the cost of holding that redundancy

in the system.

[409] **Janet Haworth**: What sort of megabytes do you think is needed on a system that's serving that sort of smart city?

[410] **Mr Turvey**: It certainly isn't my area of expertise; I'm heavy power engineering. We can probably try and get some information on that point.

[411] **Janet Haworth**: It would be interesting to find out Liverpool's thinking on this, because what I would suggest is that there will be a figure. Some people are labouring with 10 and 20 megabytes, but it might be that you need a lot more.

[412] **Alun Ffred Jones**: Right. Thank you for that. I'm just trying to wrap things up quickly. Julie, you had a question, and then Mick.

[413] **Julie Morgan**: Just very quickly, you said you thought Bristol was moving ahead, but by implication, Cardiff was not moving ahead. Could you just expand on that?

[414] **Mr Turvey**: Sorry; yes. I'm not clear on the position with Cardiff at the moment. I know they had quite advanced plans in terms of moving ahead with some smart city initiatives. I'm not clear on where they've got to at the present time.

[415] **Julie Morgan**: Right. So, you just don't know about Cardiff.

[416] **Mr Turvey**: That's right, yes.

[417] **Julie Morgan**: Thank you.

[418] **Alun Ffred Jones**: Mick.

[419] **Mick Antoniw**: Birmingham is one of the lead players within this, isn't it—within the smart cities and so on? Does that come within your area?

[420] **Mr Turvey**: It is within our patch, yes.

[421] **Mick Antoniw**: So, how are they doing?

[422] **Mr Turvey**: Again, I don't actually have any up-to-date information on

that. I do know they are pushing ahead quite hard on trying to look at the use of combined heat and power and heat networks within the city. So, there is quite a lot of activity in what can be done there. I don't think a huge amount of investment has actually happened yet in that area, but I know they are very interested in the whole heat network issues associated with—

[423] **Mick Antoniw:** They are being promoted as one of the UK's leads in the whole smart cities programme, as part of the whole European programme. Presumably, you at Western Power would be fairly clearly involved within that whole programme within Birmingham?

[424] **Mr Turvey:** Well, we're certainly—. Anything to do with the actual power infrastructure we are certainly involved with, yes.

[425] **Mick Antoniw:** But you're not aware of what it is they've actually—

[426] **Mr Turvey:** I'm not aware of the actual stage they've got to at the present time, no.

[427] **Mick Antoniw:** Okay.

[428] **Alun Ffred Jones:** Okay. Jenny, very quickly.

[429] **Jenny Rathbone:** When we went to Germany, we went to a village called Schönau, which has now become a major generator of renewable energy. Like them, would you be in a position to only supply renewable energy to customers who requested it?

[430] **Mr Turvey:** I think the reality of how networks work is: we can't guarantee where it's come from. We can try and make some estimates. There was a project that we did start to do, but it got quite difficult to work out, in terms of what's called 'carbon tracing', whereby you can actually say, 'Well, in terms of the power being extracted from a certain part of the network, where has it most likely come from? In other words, which type of generators?' It's actually quite a complex process to do. We haven't got very far with it, but I do understand that's the sort of thing people are interested in.

[431] **Jenny Rathbone:** Okay, but at the moment you'd not be in a position.

[432] **Mr Turvey:** No, we wouldn't be in a position to do that, no.

[433] **Alun Ffred Jones:** Can I just ask about rural networks? I'm familiar with the situation in north Wales where much of the rural network is old and, not to put too fine a point on it, pretty decrepit in certain areas. Obviously, some of those areas are the very areas where the potential for small hydroelectric schemes are very high. I'm not quite sure whether it's quite the same in south-west Wales; I'd imagine perhaps it is. So, is there any planning going ahead in terms of thinking about improving those networks in order to facilitate in the future, or the very near future, some of these schemes? I know there are some areas where this is a very particular problem.

[434] **Mr Stewart:** As I said, the performance of the network—not to go back through that—has improved.

[435] **Alun Ffred Jones:** No, no, I quite accept that and—.

[436] **Mr Stewart:** Okay. Over the next eight years, which is our regulatory period—. We agree a regulatory period of time with our regulator, which started on 1 April for the next eight years, and it's called ED1. Now, within that, just to facilitate, not to modernise—so, not to replace old assets, but just to facilitate increased capacity, we're going to invest in Wales about £105 million, in particularly what you're talking about, plus another £45 million on higher voltages. So, we're roughly into about £150 million just to increase capacity, which will give me another 100 MW for these rural locations. So, that will start to come on stream and I can, outwith this, give you where those particular areas are in the rural part of Wales.

[437] **Alun Ffred Jones:** We'll be very appreciative of any information outside. Okay. Alan, you had something.

[438] **Mr Simpson:** Yes, I wanted to try and take this into the arena of energy storage, because it ties in very clearly with the question that the Chair has just asked, and that is, for more isolated communities, really, their solutions are going to have to be more localised grids that include energy storage for—you know, a different approach to localised balancing. Now, I know that, as far as the UK is concerned, Manchester has got a huge slice of the pie for the creation of a city-wide network of hydrogen fuel cell storage systems, with anything from 5,000 to 50,000 contributing generators. Can you just point us to work that you have been doing on energy storage in Wales and how far that connects to localised grids and may lead us into localised tariffs as well so that there's that pooling of benefits? Just give us some examples

of where you're pushing those boats out.

[439] **Mr Turvey**: In terms of storage, we don't have any projects actually within south Wales. We do have elsewhere within the company. Over in Milton Keynes we have a very large project, which has just concluded, which is looking at the management of a network there. That included the integration of storage within it. It was very successful in terms of the technology. The ability of the technology to modify the load shape to actually control fluctuations in power was excellent. The issue still is the cost of that storage. The storage cost is still not really economic compared to expanding the network.

[440] The other area where we've looked at storage technologies was actually right down at the home level, and this was a project that we've done in Bristol, where we actually integrated batteries into people's homes. They had solar photovoltaics on their roof as well. We converted as much of the house as we could to direct current operation so that they had lighting and access for their computers and such like. It was all on a DC network. The concept behind that was to try and reduce the amount of conversion between DC and alternating current to reduce the losses that are incurred in that. So, the battery then could help them to modify the demand they placed on the network. We also placed controllers in so that we could share the use of that battery to help control the flows on the network. Again, very successful in terms of, technically, it works; it can all be made to work. Cost is still the issue in terms of storage. We are seeing reductions in cost, but at the present time it's not really economic as a commercial investment—

12:15

[441] **Alun Ffred Jones**: Is it the cost of the technology itself?

[442] **Mr Turvey**: Yes, and the battery. The battery is the real high cost at the present time. We're seeing reductions; we've seen the announcements by companies such as Tesla, and mass production will start to bring those costs down.

[443] **Mr Simpson**: Can I just follow that?

[444] **Alun Ffred Jones**: Yes, go on.

[445] **Mr Simpson**: I think it would be really helpful for the committee to get

something as just a digest of that company experience in Bristol. Because, in a way, the question that struck me that follows is, in a way, you're in a position like Toyota must've been with the first Prius or Germany with the first initiatives on PV costs and their feed-in tariffs; the solution was the creation of a different market. So, what I wanted to get from you is, in terms of the break-through costings, where storage starts to become viable, is it possible either for you to say, or to come back to the committee with an idea of, the scale at which that would begin to make different economic sense? Because if people can get a sense of at what scale a village or a town or a city needs to be to be able to have a storage system that is developed for a large market, rather than bits and bobs, then that provides a very different agenda to be playing around with for the Welsh Government.

[446] **Mr Turvey**: Okay. I haven't got that information with me, but I'll see what I can provide and come back to you with that, of course.

[447] **Alun Ffred Jones**: Lastly, Jeff Cuthbert.

[448] **Jeff Cuthbert**: It's on this very point. It's a shame it's come at the end, but it's sparked a series of issues. We know technology changes all the time—it gets better and better—and that will impact upon cost savings, undoubtedly. So, would you be able to come back to us, as well, with what work your companies are doing in terms of research and development to look at the future and ways in which storage, which, obviously, has implications for solar power, clearly—? What investment are you putting in in order to improve matters for the future?

[449] **Mr Turvey**: Yes. I think all companies have a large future networks programme where we have a number of projects that are run under initiatives by our regulator, under a network innovation allowance and a network innovation competition, whereby we actually put up proposals that have to meet certain criteria in terms of value for money for the customer at the end and the learning that's going to come out of them. They also have criteria of disseminating that information widely afterwards, and making any, if you like, intellectual property rights that are created during that process available to other people without creating, if you like, a sole provider of them. So, there are a number of things, but we can provide detail on that in terms of what we're doing.

[450] **Alun Ffred Jones**: At that point, I think I'll draw matters to a close. I thank both of you for coming in this morning and sharing your knowledge

and your experience. You have promised to provide us with some information, so the clerks will be in touch with you and we look forward to receiving that. You will also receive a transcript of the proceedings, if you could check that for accuracy. But, thank you again. Diolch yn fawr iawn.

[451] **Mr Stewart:** Thank you.

[452] **Mr Turvey:** Thank you.

12:18

Cynnig o dan Reol Sefydlog 17.42 i Benderfynu Gwahardd y Cyhoedd o'r Cyfarfod
Motion under Standing Order 17.42 to Resolve to Exclude the Public from the Meeting

Cynnig:	*Motion:*
bod y pwyllgor yn penderfynu gwahardd y cyhoedd o weddill y cyfarfod yn unol â Rheol Sefydlog 17.42(vi).	*that the committee resolves to exclude the public from the remainder of the meeting in accordance with Standing Order 17.42(vi).*

Cynigiwyd y cynnig.
Motion moved.

[453] **Alun Ffred Jones:** I propose that we go into private session and we'll just have a very quick wash up.

Derbyniwyd y cynnig.
Motion agreed.

Daeth rhan gyhoeddus y cyfarfod i ben am 12:18.
The public part of the meeting ended at 12:18.