**Creating inclusive low-carbon futures | RiDC Webinar held on 14th November 2023 (via Zoom).**

0:10  
So good afternoon, everyone. Thank you all so much for attending this webinar this afternoon. And before I begin, I just want to describe a little bit about what we're going to do this afternoon and why we're here and who we are as well, just in case you don't know who we are. So to kick off, my name's Gordon. I'm the chief executive at the Research Institute for Disabled Consumers. If you don't know us and

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fair play for coming along here, webinar you've never heard of. We’re a research charity that works with disabled people to try and make products and services more accessible. And we have a panel of over 4000 disabled and older people right across the UK who do all our research. So I'd like to think we've got a 4000 researchers all trying to make things more accessible and remove the barriers that disabled people face and they're trying to use products and services

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and this project we have done in partnership with the Energy Services Catapult and you'll hear from Rowan later on. There are aspects of project, but this has been definitely a partnership approach between the two organisations and the whole project itself has been trying to uncover and understand more about sort of inclusive,

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innovative and sustainable choices that disabled people can make. So to put that in the English, what we were trying to do was understand

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the barriers that disabled people faced when they were trying to make decisions about

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services, about technologies,

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about making the right choice, about trying to

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be better good citizens

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like we all want to do. We want to reduce our energy costs and energy usage, but we wanted to look at what those barriers are to faced people face. And So what you're going to hear this afternoon are the outputs from the second year of a two year project that we've been funded by the Energy Savers Savings Trust under their energy redress scheme. So we had another one of these sessions last year where we looked at home charging points for electric vehicles. What were the barriers there? And I can't remember what the other, but we looked at was. But

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anyway, we will send all that information out with you out after this event about what we looked at in the first year.

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But today, we're going to hear 3 presentations of the research that we've done. And then there will be an opportunity for you to ask any questions at the end. As I said, we have a lot of materials that we've created as part of this project, research reports, consumer advice, which we will share with you and we would really appreciate if you could share amongst all your networks and people you know. So to kick off this afternoon, we're going to hear from Eric Harris, who's the Director of Inclusive Research at RDC, and he'll look at how accessible consumer engagement and advice

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is when thinking about low carbon options. So that process of telling people engaging disabled people, where could there be improvements? And what did we find from our panel when we asked that question? What's it like to try and find that information out?

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After Eric, we will hear from Caitlin Slough who's a researcher at RDC and she'll go through her work on monitoring energy use of assistive technology.

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So it's a really interesting project that Caitlin ran and we get insights into how much energy charging an electric wheelchair, for example, uses and what does that mean for disabled people and consumers more broadly. And then finally we'll hear from Rowan Flick from ESC who will explore energy use and the flexibility and limitations of assistive technology in the house. Which is a really lovely companion piece to Caitlin's work because it looks at the future as energy sources change and and the demands

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and how will that impact upon disabled people and their use of assistive technologies.

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So that's what we're going to do. Each presentation will be 15 minutes long, I hope. And then after that we will have some time for any questions. Please use the chat if you want to. If any questions come up as each of the three speakers are going through and I'll

4:26  
come back to those at the end. So other than that I would make sure you've got comfortable. You have a nice cup of tea and I will hand over to Eric as I try and navigate sharing my screen. But I hope you find this interesting, enjoyable Eric. Thank you Gordon. Yes, my name's Eric. Eric Harris. I look after the research team at all IDC and the project that Gordon was thinking of was the home heating solutions project about solar panels and heat pumps, alternative low carbon solutions for the home

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that we did in year one.

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So this piece of work about engaging with low carbon energy options and advice

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is, as Gordon has says, the last part of year two. And in some ways reflects the whole 2 years worth of work that we've found for the Energy Savings Trust over us within that programme, within our programme of work.

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You move on to the next slide,

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OK. And I'm starting off with a quote from Isabel about this engagement with

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the population in general. About making low carbon choices.

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Yeah, about making low carbon choices,

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how the government and industry wishes to engage with with the general population to to make more informed, better low carbon choices and how appropriate the language is and how it talks to, or in this case doesn't talk to disabled people and what can be done to improve that so where it falls apart, you'll have quotes like this. It does make you feel guilty. It does get you down because you're thinking, well, I can't help it, but I'm being

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compared to the average person and to the average person who's fit and healthy. So their choices here that a lot of our panel members can't make. Next slide please.

6:39  
OK, so why, why choose this topic of engagement? There are three reasons why we chose this topic of engagement with the disabled, with disabled people about low carbon energy options. The first was that we saw this as a reoccurring theme over the past two years of of work and prior to the work with the Energy Savings Trust. Time and time again people were wanting to engage with all sorts of low carbon, sustainable sustainability agenda

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questions, but weren't able to for one reason or another. Typically because this is a field that changes quickly and when things change quickly, often it's an afterthought. Does it suit disabled people? And often it doesn't. So we knew from our previous research over the past two years that this is an area that our panel members want, perhaps wanted to work, do some further research and we then to to find out if that was really the case, went down the path of participatory research engagement

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and we asked them a number. We asked our panel number. We engage with our panel a number of different ways to find out what topics would be of interest for them to have us research for this last year. And lastly, we know there's a tension between wanting to engage and being able to engage from our previous research. And I wouldn't read out all the quotes otherwise we won't get through my presentation, but there's a quote to the right. Can you

8:16  
go to the next slide please Gordon? So the the, the areas of our previous research that that pointed us towards this were seen in in in the electric vehicles work, in the home heating work and the charges work, the the, the, the, the charging electric vehicles at home work. And it all pointed towards information not being accessible or contextually relevant and the suitability of advice and low carbon options often just do not sit well

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of disabled people for one reason or another. And lastly, the financial models don't reflect the lived experience of a lot of disabled people. And that's from not being in a position to be able to

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pick up some of the options because of the cost, but also the return on interest of a lot of investments are in such long envelopes that really are unrealistic for a number of our panel members.

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The next slide please.

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The second element. So we've seen how we were pointed towards this area through our previous research. But within our participatory research, when we went to our panel, we surveyed our panel

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and asked on a panel amongst other questions, what areas of research do you think we should be engaging in over the next 6 to 8 months? And what came from this survey of its 750 responses was

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a number of options of which we thematically analysed and came up with three possible areas. We then went to some focus group work with within those three areas and asked within those three or three focus groups, including sensory, physical and cognitive impairments. The same sorts of questions about the three potential areas that we saw were were were that came out from the survey

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and they were understanding the energy use of and cost of assistive technology or an equipment and that's something Caitlin will talk about shortly. Low energy choices in the kitchen and we didn't go down that path and this this particular area engaging with low carbon energy options and advice

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and the this particular area was seen as a difficult topic to research because a lot of the advice given on engagement campaigns,

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our panel we're getting very annoyed with them in in terms of saying well listen we don't we've done everything we've done this we've done the other we've done and they they felt

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being talked down to and not being included. So and because it was the the these campaigns are often government backed

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we there was a lot of if you like

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ill will towards those sorts of campaigns. So, but we still wanted to find out how we could improve this area. So we didn't drop it. We went to do this work next slide with engaging with low carbon energy options and the way into this without next slide please

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The the way to do this we thought would be

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less contentious was to use the worldwide Wildlife Fund carbon footprint calculator. It being a not-for-profit, we hope that it would facilitate a more open and holistic discussion discussion without. So we we we gave a piece of homework to our our panel members who attended some focus groups afterwards, but three focus groups. And we asked them to go through the carbon footprint calculator which had a series of questions

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after which if you answer them you'll get your results. And then some advice is given at the end. And I must point out that this wasn't a critique of the calculator at all which we found to be quite helpful, very general, but it was more of a a pro to understand what the issues might be when engaging with disabled people and this topic. So the next slide please.

12:56  
After they had done the panel, members had done the carbon calculator and recorded their results. We then invited them for three online workshops, which lasted 90 minutes,

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and we split the sessions into

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and and into two different categories. One is about accessibility and relevance, the questions and the second one was about the meaningfulness and actionability, if you like, about how of the advice given. So and there was of course a a,

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a comfort break in the middle of this 90 minute focus group with each of the groups and we sought to delve a bit deeper about the appropriateness of the language and such like in each of the sessions that could go to the next slide please

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the next slide.

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So after doing a thematic analysis of the three focus groups and all the other materials that we have available from the survey onwards, really

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we we saw that there are three elements that really needed to be in place. So active engagement with low carbon energy options for disabled people. And we categorise these under 3 headings,

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the first one being inclusive and accessible information. And that's really revolving around WC AG guidelines for the digital engagement anyways and in alternative formats and things like that. So whatever materials or whatever channels that you're using, they've got to be accessible on that level. This research didn't investigate that any further. We know that it's a prerequisite,

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so the ban it's been well documented in much of of the other work we've done.

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We concentrate on this piece of work on the contextually mean meaningful language and actionable solutions.

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15:01  
OK. That's the quotes have put throughout this presentation in the main highlight what this means when you don't have these things in placement in places where our panel members are saying, listen, this has led me to feel disengaged. I don't want to do this, which is quite the opposite to what the whole purpose of these engagements are about is. So it's doing quite the opposite of what you know. So the next slide please.

15:32  
So under contextually meaningful languages, there are 4 main themes that came out.

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First was finding relevant answers to the situation. If you've given a bunch of questions that have closed answers and you can't find an answer that matches your lived situation, then you you you are immediately when you're not included. And that's quite

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quite often the case on these the the the sort of tool

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and I've highlighted the particular example of that where they could type of vehicle was asked what type of vehicle do you travel in most often as a driver or passenger if any. And the options were car, motorbike, neither I walk, cycle or use public transport for all agents. And of course they could have included some some travel options that are more relevant to somebody with disabilities of 1 sort of rule that in this case electric, wheelchair mobility, scooters or even wheelchair accessible they have.

16:33  
Umm,

16:34  
there was a complete lack of understanding of disability within the questions and the answers and the advice given. And that's highlighted by 1 participant who's talking about what what is a typical day? When asked you know what a typical week or a month? How much energy do you use at a typical week or a month or typical days? Weeks and months are hard to come by by a lot of people with disabilities or disabled people and that's mainly due to dynamic of disability.

17:08  
But it makes answering those questions really tricky. And another area rather than understanding disabilities where some options given that aren't relevant to people but they are the the options that are that do exist. Like cycling somewhere might be outside in in many, in some people's cases, their capability or not, not something they could do that might make them feel that the whole process is ableist.

17:40  
Umm. And again, there are two groups that highlight that. Can you go to the next

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and the last two Under Contextually meaningful language is generalisations and inclusivity.

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And the first of our generalisations is. When looking at the things that came up it was apparent that

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that in order to cover a lot of the questions that might be needed for to to be inclusive to disabled people, there would be

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quite a quite a a lot more questions needed to be asked. So really this is in recognition to a design challenge that is out there for people who are designing materials to engage with the population that includes disability. There are potentially a lot more questions that need to be answered, which is what the diagram on the right is the long tail who question options. However, one of our participants did suggest a way round that was just to ask somewhere in in the process are you disabled?

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And then you can cut to a series of questions that's more relevant to to the their lived situation. And then the last thing on this section is contextually mean is wanting to give context to answer. So where the answers?

19:03  
Umm,

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they, they, they they were forced. People were forced to make a selection, but they had no choice. That there was a real desire to explain why they had no choice. And it's important to recognise that if you want to be inclusive and engage people with disabilities that the next slide

19:28  
and the second heading the actionable solutions. So you've gone through a process to engage people and now you're giving advice to people about how to reduce carbon footprint.

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One of the main things here is to recognise that carbon footprint for disability. There's no choice behind that, and it's more often than not larger than people without disabilities for a whole host of reasons that Ulster Medical, but but a number of of of reasons you'll end up having a larger carbon footprint, so being compared with the average carbon footprint from the average person can feel.

20:13  
Being stigmatised for or or penalised for being disabled, which is not so nice. And of course at home and and the shipping cost, a lot of people have no authority to change or install things. Heat pumps, solar panels and make those sort of structural changes to their buildings

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and they're living circumstances of many disabled people in terms of cost and in terms of trying to view what's going their situation of five or ten years might not be so clear. So it's very difficult to make

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return on the interest decisions that have scope 15 years for solar panels. Say next slide please.

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21:03  
Again, we recognised that technology was an opportunity here, that a lot of people with disabilities will have

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smart speaker technology because it's it can be very helpful for not a lot of people. And there is a there are opportunities there to integrate smart technology into homes to make savings of about home. However, we did see that a lot of people were worried about the cost and there was a misunderstanding of all of the benefits and and and of the technology. But it was definitely a a scene as a opportunity space.

21:42  
And lastly again, it's reiterating that people want to engage with low carbon and sustainability futures agenda but they feel they they can't and in not engaging they feel stigmatised. People feel stigmatised and I've put in that quote again, perhaps ask people if they're disabled. I think being more direct in in this area, especially with engagement, the engagement must include some very straightforward questions because it will help the conversations that followed.

22:14  
Umm,

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next question, the next slide please.

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I think that's two slides left

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this one and is trying to pull it all together and say well in in a nutshell, Shell,

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the current campaigns often

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aren't inclusive, they're not meaningful, they're not actionable and they don't come up with solutions that or they don't help disabled people make suitable low carbon energy choices. And the result of that is the stigmatism and exclusion and disengagement that really these campaigns do not want that. They want to engage people, but they're not engaging disabled people.

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So we've come up with five recommendations on the back of this work. On the next slide, please, Gordon

23:07  
under

23:09  
stated Data Grateful Awareness of the barriers that disabled people encounter when engaging with media campaigns about low carbon energy use will help provide a more relevant will help provide with more relevant information and actionable solutions.

23:25  
Fine.

23:28  
Almost all of our work revolves around asking, including disabled people, so and that's very much at the heart of the work we've done here.

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Participatory research and design is very much at the heart of our IDC, but

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every time we engage with the several people about design in particular,

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um, the advice is engage people with disabilities and recognise that this disabled people will often have larger carbon footprints than the national average. It's true

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instead of the living situation that many disabled people there are in and how it might impact any advice given

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the difficulties that some disabled people have with making medium term investments

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and be mindful of the impact of disability on and suitability of choices given

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at the moment all of those things aren't in place for from government campaigns I've seen over the past year or two and more open online tools and things like that. So I think if to include disability and disabled people,

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we need all one needs to talk to disabled people about their particular situation and their and being more meaningful, actionable and meaningful. I think that's the only 15,

24:51  
17 minutes.

24:54  
He's not. Eric, thank you very much and thank you for reminding me of the the projects that we did last year as well. Um, there's an awful lot in there. And thank you for going through what is a very substantial and detailed piece of work that you've carried out, not not just on those findings, but also on the consumer guidance. As I said at the beginning and for those who joined us slightly later, uh, we're recording this session. So if you've missed anything, you'll be able to watch back. I should be able to get all of this edited and up online by tomorrow, and we'll also share

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to the session today all of the supporting documents and reports that we're talking about this afternoon.

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Gonna hand over to Caitlin Slough, who is one of our researchers at RDC, and she's going to talk through the

25:45  
monitoring of assistive technology, which is a really interesting project. So Caitlin, if you are

25:51  
around available, if you're ready to take us through your presentation. Thank you, Gordon. Yes, um, so I'll start by briefly just recapping the background of the project. So I know Eric's gone through the backgrounds already. So I'll just give you a quick overview. And so next slide please, Gordon.

26:13  
We firstly distributed a survey receiving 750 responses

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and from this we identified 3 key topic areas.

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Firstly, assistive technology use. Secondly, energy use in the kitchen and lastly, media campaigns for behaviour change.

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We then explored these three key areas in focus groups.

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From the focus groups, a key finding emerged that while some participants used an ear smart metres to gain an overall view of their energy usage, less was known about the energy consumption of individual pieces of assistive technology.

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This then led on to the strand of the research that I'll be focusing on today, which looked at the energy use and cost of assistive equipment.

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Next slide please.

27:06  
We started off by conducting preliminary interviews to support the research design. Following this, we distributed energy monitors to 10 participants. This was over a 30 day

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and we then followed up with focus groups to reflect on participants experiences of energy monitoring.

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And next slide please.

27:28  
Firstly, looking at the design of the interviews, So we had 10 participants who were selected on the basis of having at least two pieces of assistive technology. However, many in fact had far more than two, with one having around 27 pieces of equipment in their home.

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The aim of these interviews was to find out whether the Casa Smart plug worked practically for people.

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So this is the energy monitor pictured on the right hand side of the screen and on the left is an alternative monitor that one of our participants used, which is an energy monitor that does not connect to an app. So the cast of Smart Plug connects to an app and the other was provided to someone who wasn't able to download the app.

28:17  
We also sought to hear from our panel about the the benefits of this project, both for them personally and in the wider sense.

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So next slide, sorry please.

28:32  
So looking at the findings of these interviews, overall participants felt that a project monitoring the energy use of their assistive technology would be beneficial,

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in many cases on a personal level, but perhaps more so, particularly in the wider context.

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Key individual benefits identified included firstly the importance of quantifying energy use.

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This was to provide more information to assistive technology users.

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So this panel member said it's going to give people with a disability more information because at the moment there is very little information out there in regards to energy output for assistive technology.

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Secondly, the importance of being able to make informed choices was highlighted as key here,

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this panel member said, I have OT's coming in and saying we need to get you this equipment or we need to get you that equipment. By knowing what the energy is, I can have that extra equipment. But then, if once I've got already, it's taking too much power, do I really need that?

29:41  
It will help me, I think, making future decisions on what equipment I need and what equipment I don't.

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Many wider benefits were also mentioned.

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Two of the main benefit benefits raised were to provide evidence for financial support provision as well as data to support the energy efficiency of the technology that set itself.

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However,

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frequently highlighted by our panel was the fact that whilst in some cases energy monitoring would be beneficial on a personal level overall, the extent to which people felt they could change their energy use was limited.

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Many felt they would not be able to minimise

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charge IT and charging assistive technology and emphasise the vital importance of this equipment for health and well-being.

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I think the following, excuse me, I think the following quote sums this up.

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It might be an argument for using with my energy provider about whether I am on certain packages or not. Help lobby the government to take account of that because we have no choice. I can't not have them plugged in so it's a cost that I have to meet.

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So now moving on to the main project and firstly looking at the design

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who took part. So we had nine out of 10 participants continued to the energy monitoring project.

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It took place over 30 days and was carried out remotely, with a researcher providing support over the phone and via e-mail.

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So what were we measuring?

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We asked participants to monitor two to three pieces of assistive technology using the Casa Smart Plug,

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and then one participant was provided with the alternative monitor as pictured. Previously

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frequently measured pieces of equipment included powered wheelchairs, adjustable beds, and rising recliner chairs.

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A full list of all of this assistive equipment is outlined in the full report.

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So how did we define assistive technology? We asked people to measure equipment that is most vital for health and well-being, focusing more on assistive aids over sort of purely medical equipment.

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The research questions we sought to investigate

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well, what is the 30 day energy consumption of assistive technology?

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Secondly, what can be done to support assistive technology users with energy consumption in the home?

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And lastly, what are the benefits of people knowing the energy consumption of their assistive technology in terms of purchasing and choosing a new pieces of equipment?

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This was with the aim of raising awareness of the energy incurred purely as a result of having assistive technology in the home

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and also as a basis for potential in-depth future research comparing the energy efficiency of various types of assistive technology.

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32:53  
So moving on to the findings, firstly, looking at the energy monitoring data itself,

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the average energy cost over 30 days calculated using a standard rate was about £50 per year.

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Now, there were some quite large variations between the different pieces of equipment, and all of the data is outlined

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in a table in the full report.

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In one case there was a piece of equipment air flow mattress that consumed a particularly large amount of energy.

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When calculated using a standard rate and not considering individual circumstances,

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this could add up to around £136 per year.

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And that's just for one piece of equipment.

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I think it's really important to emphasise that this individual had around 27 pieces of equipment in their home

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and the majority of participants had far more than the three pieces measured in the field work.

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Many also highlighted both in the focus groups and the interviews that we could not include hardwired equipment such as ceiling track hoists, which many felt very strongly that this would mean the actual figures could be quite a bit higher

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if you included a hardwired technology into the data.

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So our next slide please.

34:25  
So were there any benefits of energy monitoring?

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An interesting indirect benefit was being able to control assistive technology remotely,

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and in one case this actually reduced the need for carer support.

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There were also some small individual changes that could be made so participants mentioned they could turn off equipment with the timer within the energy monitor to avoid trick or charge.

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Although overall people found the energy monitors more straightforward than they maybe initially expected, there were some issues with a lack of internal accessibility settings and screen reader compatibility.

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Perhaps most importantly highlighted was the statement that

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whilst the energy monitoring was beneficial in some ways, disabled consumers cannot overall reduce the use of equipment. So the focus must therefore be on the energy efficiency of the technology itself.

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And next slide please.

35:34  
Here is a particularly illuminating quote from the panel member explaining how the remote function on the monitor reduce the need for carer support.

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It made me really think about what else I could do going forward. A real novelty thing, being able to turn the fan on and off myself.

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In fact on one occasion I called my carer in to do it and then I was like, ohh no, you can go away again now. So for me it is actually quite an eye opening experiment.

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A key theme that arose throughout the entire project was relating to the lack of information.

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36:15  
Firstly, in terms of the available

36:20  
information about purchasing energy monitors in the 1st place, despite the mentioned benefits, so this panel member commented for me it was very accessible. I guess it felt a bit daunting before I did it, you know, to start with, I think if I'd not had your kind of guidelines and, you know, knew that I could get advice, I might not have started it in the 1st place because I think the inaccessible bit is like finding the plug, you know, going on Amazon yourself and reading through all the information and finding out what you need.

36:55  
People also felt there was a lack of available data on the energy efficiency of different technologies,

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this panel member member said. There are lots of variables. Being disabled is expensive in so many ways.

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We are lucky in a way that our power, chairs, beds, stairlift have been provided via grants and NHS provision. But it does mean we are limited on what item we get.

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I think industry in general should give information on how much energy devices use.

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There was also a consensus that whilst there is a wide availability of energy saving information out there, it didn't feel helpful to them based on their individual needs.

37:40  
So what can be done? So next slide please.

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Recommendations for action include making information available and accessible.

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This information should be tailored where possible to individual needs and circumstances. Types of information can include consumer information or information on financial support.

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They should adhere to the Web Content Accessibility Guidelines.

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Secondly, ensuring there is a minimum set standard set for the energy efficiency of assistive technology.

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Next, consider carrying out further research allowing for direct comparisons of the energy consumption of an extensive range of assistive technologies, including medical equipment.

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Research should involve large sample sizes comparing manufacturers and models of this vital equipment.

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Next slide, please.

38:40  
Next, Looking at app developments or ensuring apps associated with the monitors are accessible and again consistent with the Web Content Accessibility Guidelines

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and evaluate the benefits of providing energy monitors to assistive technology users where appropriate.

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And last but not least, increased funding for assistive technology users to run this vital equipment.

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Next slide please.

39:09  
To finish, I think this quote sums up the importance of research in this area.

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The technology that I use maintains my independence. If I didn't have my BIPAP machine, for example, I wouldn't be here.

39:22  
Thank you. I'll now pass over to

39:29  
that was brilliant. Thank you so much Caitlin. And now again I would say this, but when we send the reports out it, it's a fantastic piece of work and I think you've described it brilliantly there Caitlin. And actually we are working on a piece of substantial piece of research for government looking at the impact of cost of living uh on disabled people. And quite shocking figures are coming out of that where one in five people are cutting down or not using their assistive aids or medical equipments because they're worried about.

40:01  
Energy costs and just not being able to afford their bills every month. So the information you have pulled out here Caitlin, through this research

40:10  
gives information and gives people agency over making choices rather than really worrying about stuff. So it's it's fantastic and thank you very much. Thank you.

40:19  
So as I said before, if you have any questions, please pop them into the chat and we'll pick them up after our next presentation, which will be from Rowan from the Energy Services Catapult. So I'll hand over to you, Ron.

40:36  
Hello.

40:39  
And yeah, so I'm around Pleck from Energy Systems Catapult. If we go on to the next slide, I can tell you a little bit about the background to this research as well. So

40:52  
yeah, so as Gordon said, this research follows very nicely on from the piece of research that Caitlin did. It also follows on very nicely from the research that we did in an earlier part of this project as well.

41:07  
We are the catapult. We're quite focused I suppose on the the future impact of the. We were focused quite heavily on what the impact might be to disable consumers of the the changing energy system. So I thought I'd just start off with a sort of a little bit about what the future energy system might look like. So as we move to making more use of renewable and cleaner energy, there's also going to be a shift

41:41  
to increase electrification because we can produce electricity more cleanly that we can then we can produce other fuel sources or the other fuel sources are fossil fuels. And and this increase in the amount of electricity that we use and the amount of renewable energy that is in the energy system is going to first of all put increased pressure on the grid. It's going to be needed. The electricity grid is going to need to deliver more electricity to more people over time. So it's going to need to be reinforced

42:16  
upgraded

42:17  
and and there's also going to be more of a challenge to match the sort of varying supply of renewable energy to to people's demand for it. And so in the future we are going to have to more and more try to reduce peak loads and so reduce the amount of energy that we use at times when everybody else is trying to use energy because that's when the maximum pressure is on the grid and also to try and be a little bit more flexible about how we do use energy. So that it,

42:51  
it's more possible for us to match the the generation, the clean generation of energy to the energy that we use. And that's going to.

43:02  
Yeah. So you can see here is a sort of a the graph on the right here is a representation of actually the amount of well actually this is a representation on how energy might be charged for in the future to try and encourage people to use energy and less at peak times and more evenly throughout the day and actually make use of times when renewable energy generation is more available. And so this is the way, one of the possible ways that we might end up having to pay for energy in the future. This is an example of a, a tariff that does exist now.

43:36  
So an agile tariff where you can see that prices for energy over that evening peak period are a lot more expensive than prices at other points in the day and that there's the cheapest time to use energy is overnight.

43:50  
And so that's one way that we might end up that the the networks might end up encouraging us to use energy more flexibly. But there are other alternatives as well and and we have been involved working with a number of innovators and network companies to to explore the different possibilities with people. So in the first piece of research that we did, we were very interested in exploring if you could just move on to the next slide please, Gordon. We were very interested in exploring what the impact on disabled consumers of this change in the energy

44:24  
system might be and through this piece of work we noticed or we explored a number of things. So we

44:35  
we explored with disabled consumer what some of the the issues or problems that might that might face them. So we asked them what they were currently reliant on energy for in their home and and highlighted that although we all need energy in the home for health, well-being and hygiene, food preparation and communication, disabled consumers are actually more reliant on energy for these things.

45:01  
And also that a number of disabled consumers rely on power for mobility aids and for life critical equipment as we've just been hearing about from Caitlin as well. So if there were to be any increases in prices at certain times of day to use these kind of to access energy or if it was, if energy was in short supply at particular times and this increased dependency on an energy for these things that disabled consumers,

45:35  
that might impact them more than it might impact other people. So the aims of this particular piece of research here is to follow up on this work and explore a little bit more about how many people in the UK rely on energy for it, specifically for medical devices and mobility aids. And we wanted to know a bit more about how much this costs them. And then we wanted also to follow up on how that might change in the future energy system as well. Next slide please.

46:12  
So to do this, we conducted a couple of pieces of work. So first of all, we conducted A nationally representative survey to understand how many households need energy for medical devices and mobility aids and also to find out a bit more about what these technologies are. And and we also conducted a diary study. So we asked 11 participants from our living lab with disabilities to to record how they use

46:43  
some various pieces of equipment in their home over a week. So how often they used it and what they used. And in addition to that, we also gave a number of these participants, I think nine of them in the end as well. We gave them energy monitoring plugs as well to monitor how much energy their medical equipment and mobility aids were using. Next slide please.

47:11  
So which technologies do people rely on? Ohh, something funny happened to my slide there. Next slide please.

47:18  
Very squishy picture.

47:21  
And so we find that more than 8% of people in the UK live in households that rely on energy for at least one medical device. And so the most common medical device that people told us that they that somebody in their household used was an error. I I was there as a 8%. But we know that actually the number is going to be a bit higher than that because some households rely on multiple pieces of equipment. And so we imagine that the the total figure is a bit more than that.

47:54  
Um, if you could move on to the next slide please.

48:01  
And again. More than seven people, 7% of people in the UK live in households that rely on energy for at least one mobility aid and so mobility aids that enable them to move in and outside of the home or maintain a comfortable position while stressing or sleeping. So the most common mobility aid that people told us that they used was mobility scooter. And nearly 5% of people live in households that also make use of stair lifts and then other top

48:33  
them pieces of mobility equipment or wheelchairs, hospital style beds as well. So a number of the things that also came up in Caitlin's research as well.

48:43  
Next slide please.

48:48  
So I've put my OHH, it's a, it's also slightly gone off the screen here, but I think you can see enough of it to to get a snapshot of I think what Caitlin was saying is that actually there's huge variation in the amount of energy that different types of medical equipment use. And there are a couple of reasons for this. One is that different brands, different models and makes of equipment have slightly different energy efficiency, but also individual disabled consumers use these technologies differently to meet their needs.

49:21  
And so when we asked people to monitor and log how much energy their equipment was using and so this is over the period of a week, there you can see the data. Some of them were quite consistent like the the two people who used stairlifts used almost exactly the same amount of energy over the course of a week, whereas others were quite varied in the amount of energy that was used. And and you can also see that whilst a lot of this equipment doesn't use very much energy at all over the course of a week, some of it uses really quite a lot. And so the the mobility

49:56  
them equipment used considerably more than some of the medical aids which actually used very little energy. And although as Caitlin pointed out, people have multiple pieces of equipment. So whilst the costs for individual pieces of equipment is actually quite low, you can see the estimated costs there that we've put for the individual equipment based on the averages from our small sample. So these I want to stress are not intended to be representative of the population. This is just to give you a snapshot and a feel for the variance and the the type of costs that people face

50:30  
of the individual pieces of equipment. So yeah, some of the costs are quite low, but other costs could be really quite high. So mobility scooter and charging up potentially sort of nearly £250 a year.

50:45  
And so if we go on to the next slide please.

50:51  
And so we wanted to do a little bit of exploration again squashy fiction, never mind next slide is fine. We want to do a bit of exploration about what might happen in the future energy system. So as I said at the start, one of the one of the aims of some of the the future and and these these pricing schemes do already exist is to try to encourage people to use energy when it's more plentiful and it's cheaper and to shift away from using energy at the times that other people that everybody else is trying to use it

51:25  
and it is then more expensive to produce and supply.

51:31  
Um. And so this is a graph again of an agile tariff. This is actually I asked a colleague to produce me an average price per half hour of energy of one of these agile time, time of use tariffs. So this is the average cost of energy per half hour over the last three months in the region that I'm in, in the Midlands. And so we felt that that would give us a a slightly better representative picture of how much energy might cost. So you can see how that might change over the day

52:08  
and I'm speaking to

52:11  
a number of people on our panel in the living lab, we heard from people with disabilities that they that a number of them are actually trying to use energy more flexibly. So they they are already on either on some kind of time of use tariff. So some people have cheaper energy overnight, just the old economy 7 means that energy is cheaper overnight. Some people have an electric vehicle, so they're on a special tariff especially designed for those kind of vehicles. Give them cheaper

52:45  
energy overnight. Encourage intended to encourage people to charge their cars overnight when energy is much cheaper. And so we did hear that some disabled participants were already shifting their energy use where it was possible for them to do that overnight in particular and things like charging mobility scooters for example.

53:08  
If we go over onto the next slide, please,

53:13  
but obviously not everybody can be flexible. And as Caitlin pointed out,

53:19  
reducing the amount of energy for using this equipment is not something that is possible for disabled consumers and it's not something that we would ever want to advocate. And also it's not always possible for them to be safely flexible with how they use energy.

53:38  
So I've got a few example quotes here from people who took part in in in our diary study and tell when we asked them, you know, how possible would it be for them to be flexible with the way that they used energy. The graph on the right as well as some data from the survey that we sent out

53:58  
and that shows how many people, the percentage of people who responded to our survey that told us that they couldn't ever be flexible at all with the equipment. In fact we were quite surprised at how many people had said that they could sometimes be a bit flexible with some of the equipment quite frankly. But a number of people did tell us that they absolutely couldn't be flexible.

54:22  
But this does mean there's a little bit of scope there, I think for further exploration and understanding about what's going on.

54:30  
And so, yeah, so for example, some of the devices, we also asked how many people, we asked people to tell us how the devices and the mobility. So we asked specifically about medical devices and mobility aids in our study. And we asked how many of those were powered by mains power and how many of them were powered by

54:55  
charged. So there were battery powered and most devices currently are mains powered, but some of them are battery powered and things like mobility scooters. Obviously the one that we sort of had up there as being the highest use of highest use and and and wheelchairs that use a lot of energy, they are often battery powered as are some stairlifts and if we could go on to the next slide.

55:25  
So some of some of this equipment is battery powered which you know he gives us some hope that there might be some potential there for flexibility. But we also asked people to tell us when they were currently using these technologies and as you can see most people currently need to use these technologies at peak times of the day. So either in the morning or in the evening at peak times. Which again, you know, raises concerns because if people are are needing to use these equipment

55:58  
peak times, they are likely potentially to be hit by high energy costs in our future where energy is more expensive at these peak times.

56:10  
If we could move on to the next slide please.

56:16  
So to help us sort of contextualise or it really understand the implications of this a little bit more, we created a couple of case studies based on the data that we had collected. So based on some of the diary study data that we had and also some of the the data that we had from the the representative sample as well. And this is the first case study that we put together.

56:46  
So Susanna and Tom are entirely fictional, but the data, but they're they're they're scenario is based on the data that we did collect. So in Susanna and Tom both rely on CPAP machines and the use of CPAP machines to help them sleep overnight,

57:06  
and they use these machines for around about 8 hours a night each.

57:11  
Susanna also often has a nap during the day and so a couple of times a week she she uses it again during the day. In addition, Tom has chronic kidney disease, is on the waiting list for a kidney transplant and he requires 4 dialysis sessions throughout the day.

57:33  
And Tom is quite anxious to maintain his schedule, his regular, his regular schedule for for dialysis as you can imagine. So if we move on to the next slide

57:45  
and we attempted to do a bit of an exploration into how much energy costs for them might be affected in a future energy system. I will have to say

58:01  
we will have to give a little bit of explanation around this. But anyway on the left we try to work out based on the data that we collected from some of our participants, how much energy people with similar technologies we're using already And worked out that today's sort of standard prices, their energy costs might be around about £1.52 a week or £79 a year for these pieces of equipment. And then we used that set of average data that I told you about before. So the the Agile

58:35  
tariff that had been

58:37  
and summarised for the last

58:40  
three months into half hourly costs and made some assumptions about when Susanna and Tom would be using the equipment and then based on those prices, how much that would cost them. So the estimated energy costs in the future are if we assume that they continue to use the equipment that the way that they currently do according to the case study and actually the weekly cost comes out a little bit less and so does the yearly cost. And this is because if you look at what the average Agile

59:13  
sort of tariff is, it's actually considerably lower. The average unit cost of electricity for for this and this is a real tariff is actually lower than the average cost of electricity for

59:27  
that sort of other tariffs that serve the flat rate tariffs that most of us are on.

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And and I did ask for a little bit of insight from our technical experts about how how realistic we thought this might be of a future energy costs. And

59:46  
UM

59:49  
obviously nobody can predict exactly how much energy is going to cost in the future. It is possible that these costs might be higher, but we imagine that the, the shape of the costs is, is possible is probably going to be quite similar. And there is the possibility that if we can use energy more flexibly that might help us bring the overall cost of energy down. But I think we have to be extremely cautious about sort of reading into this that in the future just by switching to a time of use tariff, people would save money on using their medical equipment. But what I think is more interesting.

1:00:23  
Is the second calculation that that I did there, which was to to sort of think about, well, how might those costs change if Susanna and Tom were able to use their energy a little bit more flexibly. And based on what they told us about how they have to use energy, they're really is not a huge amount of flexibility available to them. And because the costs, because they're already using their CPAP machine overnight when energy is cheaper and because they can't really be very flexible with how they use their dialysis machine and there's very little cost savings

1:00:57  
to be made there

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and a little, but not a huge amount. And I think arguably Tom, armed with this information, might be quite reluctant to change the way that he's currently using his dialysis machine.

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If we shift onto the next case study,

1:01:15  
yeah. So

1:01:17  
this gentleman lives on his own in a ground floor apartment and and we're actually only looking at his use of a mobility scooter which he uses daily to get around because it's friends and go to library.

1:01:35  
And he has a rechargeable battery in his scooter and he usually charges it when he comes home. But he actually has said that he would be willing to charge it overnight if this would reduce his electricity bill because this has increased quite a lot for him in the last year. But he's very anxious or key to make, keen to make sure that he's got enough charge in his scooter for the next day.

1:02:01  
So if we go on to the next slide, we can see that the calculations here are slightly different and quite interesting. So if he was to use his scooter, and we've made quite a number of assumptions here, informed by the participants that we observed in our diary study. And so we're assuming that actually he charges this scooter a couple of times a week, so not every day, in order to have enough energy to do what he needs to do with it. And he's

1:02:35  
these child, he's tried this and he knows and he's comfortable with this as a routine. So charging it for about 7 1/2 hours and twice a week, starting the charging when he comes in about 5:00

1:02:47  
the scooters using around 17 kilowatt kilowatt hours per week and that might cost him about 465 a month or £241.00 a year.

1:02:59  
And again switching to a time of use tariff because that's quite a peak time to use energy, it actually again came out as being slightly less. But again, pinch of salt, whether or not the actual price would be that much lower in a in the future,

1:03:18  
but you can start to see the huge difference that being able to use and charge flexibly would be there. So if he was instead to actually start his charging at about 11:00 PM, he would make significant significant change savings on the charging. So you can see that there's a huge benefit there to being flexible with when he charges. And as we spoke to AS, as Caitlin said, you know, people were really interested or sort of

1:03:52  
It was quite a discovery for people that they could control things remotely via via the smart plug. So you could imagine that if you could design a very usable scooter charging interface allowed him to plug his scooter in when he comes back at 5:00, but the charging not to start until energy was cheaper. But this could provide actually a huge benefit to him in the future.

1:04:17  
OK. We can move on please.

1:04:23  
So I think that was most of what I wanted to cover. So we had a look at the number of people who are currently reliant on energy for essential medical equipment and mobility aids in the UK. And as I said, that 8% figure is I think an underestimation and we're going to update the figures soon by looking at the data in a slightly different way.

1:04:48  
But that's actually a large proportion of the UK population who are impacted by this and who are having their energy costs impacted by the, by the to make use of essential medical equipment and mobility aids. So this is not a small problem. This is actually a problem that's affecting quite a lot of people in the UK, not that that makes it

1:05:10  
anyway. So the costs associated with using this equipment actually varies considerably, as both myself and Caitlin had revealed. So although some of the costs for medical equipment are actually very small in themselves, it's really important

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to be aware of the situations in which these costs might be really high. So there are some real, there are some cases where people might be facing really very high energy costs for certain pieces of equipment and that these costs could vary even more in the future.

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But I think there are a couple of positives that come out of this. So although it's really important to understand the costs and make sure that support is available and to those who are most affected by it, there really is the potential for the future, any system to actually be better for everybody. And as long as disabled consumers are involved in the design of solutions that will work for them. And so that we can actually make sure that we release this potential and make sure that this future energy system is is better for for everybody.

1:06:24  
Thank you.

1:06:27  
Thank you. And that

1:06:29  
was fantastic and it's brilliant to have those

1:06:33  
global figures in terms of the use of medical equipment. And apologies for all the squished images and table, I don't know what went wrong, but we will be sharing the presentations and the video of this today. So thank you to all our speakers this afternoon. I hope you found that interesting and stimulating and has inspired you to ask some questions. We've got a couple of comments or questions in the chat.

1:07:00  
So umm,

1:07:02  
I'll run through

1:07:03  
couple of them. So first of all from Charlie at UK Power Networks, and this is for Caitlin, Eric and Rohan. Is there any existing research about the typical living situations of disabled people so that mindful consideration can be done to develop helpful information? To add 1 question from Charlie and from Scott

1:07:27  
from the Carbon Neutral islands, what work is being done at the higher levels by manufacturers and suppliers when it comes to the energy efficiency of assistive technology to ensure individual users do not start cutting the use of essential but perhaps expensive to run equipment?

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And those two, I hope Charlie and Scott have sort of captured what you wanted to ask, but please feel free to jump on and and ask the question yourself if you want. But UM, Eric, Caitlin and Rowan, is there any response to Charlie or Scott's questions?

1:08:01  
I think I could give a response to the first question because I've had the benefit of quickly looking up what the research is from the OS in terms of disability and housing. There's a report from the O NS 2019 that details the housing situation, social economic information about

1:08:23  
housing and disability. There's also an Outcomes for Disabled People 2021 report for on the OS. So those two documents would have a fair bit to underpin the living situation.

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I'd add to that and say

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an awful lot of research we've done also collects a certain amount of social economic information about housing

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over the past couple of years. So, yeah, there's a fair bit out there.

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Thank you, Eric. Thank you,

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but I can put the links in in the in the chat.

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Perfect.

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And Scott's question about UM

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manufacturers

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and the sort of energy efficiency use of technology and do we know what is going on there? Have they thought about it is have you any insights and not or anybody else in the chat? If anybody's got any insights to help us answer that question, that would be really helpful.

1:09:32  
Eric says no,

1:09:36  
the manufacturers are up to no. I'm afraid

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that's a no scope but certainly that's something that I think would be very

1:09:44  
ohh he's thinking about research is great. You've produced reports you involve loads of people but actually it's what comes next. And I think some of the insights that we've gathered through these three projects but also through the the first stage we will share and and make sure that others who have got influence and reach understand and see them. So it's it's really important that we we share this and it's it just doesn't finish with today but we we will we will continue to try and push that. Karen, the question. Hello. Hi. Yeah,

1:10:18  
pretty presentations. Thank you so much. Yeah, I had a a question around, it's kind of, well, it's not a question, but it's just pointing to me in terms of we can reduce the energy efficiency, sorry, improve the energy efficiency of the the kind of technologies there. But it's really striking me that it's about changing well changing the price. So really kind of pressing for social tariffs, but also whether there's a way in terms of the flexibility that that people using assistive technologies could have a a battery installed in their home, but then they can make use of that flexibility

1:10:52  
is another Ave in. So just raise that as a kind of point and there may be other ideas around that, that could help to increase that flexibility.

1:11:02  
Thank you. Karen. Rowan, perhaps you might want to jump in and that. Yeah. So actually in the first piece of work that I sort of fleshed out very quickly on the screen at the beginning of the presentation, we did do a piece of work to explore

1:11:18  
number of solutions or ideas that we generated alongside disabled participants and about things that they thought would be useful solutions and useful ways to help them overcome some of the the potential challenges and that might emerge as part of this transition into the future energy system. And having a home battery is certainly one of the things that people raised as a suggestion and we did explore that with them in a little bit more detail. So yes, that's definitely

1:11:53  
one possible way that you could, you could do that. But I was also wondering if we could think on an individual level as well about technology. So there's a number of different possible ways that we could design technology to be flexible, to use in a way that doesn't actually limit the way that people are able to use it and that it to make sure that it still meets their needs while also sort of interfacing flexibly with the energy system, I think is the way that you would want to try and do it.

1:12:27  
So yes, definitely battery is a possible solution and I wonder if there are some other solutions as well. I think there's definitely scope for exploration there.

1:12:38  
I just wondered also this may not apply, but where there are kind of a group of disabled people living in a in a place where that is an obvious kind of case for having a a communal kind of battery if you like, makes sense and could be a real resource as well,

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right? Thank you, Karen,

1:12:59  
an old friend of our IDC, Andy has put a comment up in the chat. Um,

1:13:05  
and I'll read it. But Andy, you could perhaps say it yourself rather than have me read it out.

1:13:16  
Ohh, can't hear you.

1:13:19  
I'll read it out while you're trying to work out. So Andy said things like, UH they should go to off to him and UK regulators network. And there's a wider question is how to energy and other utilities building consumer protection into tariffs. I suspect adopting how they use energy can be hard.

1:13:39  
Yeah. I mean, I think that was our assumption when we started this piece of work that, you know, we would find some potential risks and that we would make recommendations on how those should be mitigated against in terms of potentially protections or yes and and protections into tariffs or I'm not entirely sure exactly, but I think that is definitely something that we feel should happen.

1:14:08  
I've used that excuse a lot, Andy. You might have gone to replay it up. It's a great one. Thank you, Ron.

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Any other thoughts or questions or comments anybody else has?

1:14:23  
I have one that I would like to ask.

1:14:27  
Ohh yes sorry. I seem to remember that under the chat somebody had asked about the implications of storing energy in batteries overnight and it was a safety issue. I don't know the answer. You know, going against current advice

1:14:46  
is yeah, charging overnight. So that's interesting cause I've been conducting quite a lot of flexibility research with quite a lot of different consumers, not just disabled consumers. But there's obviously a huge interest in exploring this as a possibility for the future and a number of times this kind of thing has come up. So you know, encouraging people to run washing machines overnight again, that is not recommended to people for fire safety reasons as well. So I think that's a really interesting point. And

1:15:20  
if if we are seriously going to need to use energy more flexibly and this is one of the potential solutions, then that's going to have to be looked at. And we're going to have to think about is that really a requirement And if it is, then what can we do to to get around well to get around it to make sure that it is safe and that it's something that we can do.

1:15:42  
Thank you. That's twice you've bailed me out Eric, today. So thank you very much and apologies Scott for missing that question. I suppose the question I wanted to ask of of the the three presenters today is and Caitlin, this might be a little bit unfair and you. But over the two years of this project we've been working on, what are the sort of

1:16:00  
lessons that have come out of this for us working in this area? And what would we hope to see change as a result of the research?

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Nice simple question.

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Only there was. I mean each report has repeated lesson recommendations. I think the engagement with disabled people is something that constantly coming out

1:16:28  
understanding disability, again contextually informing design that that's the the main output. So I think the learnings, the old catch phrase, when you know things happen quickly, disability gets considered as an afterthought and retrospectively So if there's rushed policy, it usually is

1:16:53  
not for the benefit of disabled people, it's at the expense of disabled people. So that's I guess another thing that we've

1:17:00  
had confirmed, but we kind of knew this.

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Yeah. Thank you, Eric. Caitlin, do you have any sort of thoughts with as you've worked on this project, what is sort of the lessons that come out of it?

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Yeah, I think I would echo Eric with the,

1:17:17  
there's a general kind of consensus that people are excluded from this domain and that there's kind of they don't have access to information. I know I included it in my presentation as a a key theme, but I think it's something that has come up in the work last year as well and across different projects. I've worked on RDC and I think that's key because it's not having the information in the 1st place which then leads on to all of the other problems. I don't think it would necessarily resolve all of the problems, but it's it's a I think it's a really important

1:17:51  
starting point and something that people mentioned again and again in our research.

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Alright, thank you and Rowan,

1:18:01  
well we've we've brought thanks to RGC, we've brought a number of disabled people onto our panel. So when we are working with innovators to actually design, test, evaluate energy products and services, we can now make sure that they are tested with disabled consumers, not just with the early tech adopters that might be the people who are prone to type it sign up to take part in this kind of research. We also learned a huge amount from them

1:18:35  
about working with disabled consumers and and making it possible to include them and learn from them in research. So I think we've improved a number of our internal processes in in doing that and we have grown the lab again. So we've so in addition to the people who joined us from your panel, we've also managed to recruit some of some of our own because we've made the whole process more accessible as well. So I think that's been a huge benefit to us and hopefully that will also be huge

1:19:10  
benefit to the innovators that we work with as well in the future. Because I think that's the thing that has come out clearly again and again and again from this research is that

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you need to include disabled consumers in the design, development, evaluation of these products and services. Because when you do, you discover things that might not work for them, but you also reveal a number of possible opportunities. And a number of these opportunities are things that will make the energy system better for everybody, not just for disabled consumers. So I'm really pleased with that as an outcome of this work.

1:19:49  
Brilliant. Thank you, Ron. And so you'll get to see that when we send out the reports and stuff after today, just that balance between identifying the problem but also looking at some of the solutions and opportunities. And I just we're drawn to a close and I just want to thank again the Energy Savings Trust for funding this work. It was speculative at the beginning. We didn't know what we were going to look at because we asked our panel what their priorities were and where we should focus our efforts and trying to uncover some of the stuff you've heard today.

1:20:22  
And I was just reflecting as as everybody was talking, when we were awarded this funding, the term cost of living crisis didn't exist. We were at the end of COVID and we were dealing with all the problems of disabled people feeling isolated and ignored during that process. We are now slap bang in the middle of a really difficult and challenging and persistent problem for disabled people. 89% of disabled people are worried about heating their homes this winter and this work is couldn't be more relevant in trying to influence and shape and make

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those who have the opportunity to bring about

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different social tariffs of energy. Considering the needs of disabled people couldn't be more important, so I just want to thank the Energy Savings Trust for their foresight and and I get not prescient but their their ability to fund this type of work to begin to uncover the things that are not always obvious until you actually engage and speak with disabled people. So

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I hope this has been interesting and I hope you've taken something away from this.

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I will also as we wrap up, I'll make sure that we send out everything that we've talked about today in terms of the videos, the presentations and any responses to the questions that have come up today as well. But I would ask a favour of all of you. You know lots of people in your industry, your sectors, the people you work with. Please share this information with them because as I say, research is only as valuable as those who say it and use it. So please share it around and and if you want to talk to us about the research in any more

1:22:03  
detail, I'm sure Caitlin, Rowan and Eric would be more than happy to spend some time with you going through all of that and drop us a line anyway if you want to find out more about our work. So thank you all very much for your time this afternoon. It's been really for me, it's been really enjoyable listening to and listening to your questions. So thank you all very much and hope you have a nice afternoon.

1:22:26  
Bye, bye.