Facilitator 1: Do you want to give it a little introduction to the project? First, , before I dive into the workshop.

Facilitator 2: Yeah, yeah, I just thought it might be worth. I know you've spoken to [Facilitator 1] about the project when she installed the equipment in, in your house, but I thought just to start off, it might be good to just briefly remind you like what we're doing and why we're here today. So just the project as a whole is really trying to kind of think about energy data and then like how we can engage with energy data in ways that stretch a bit beyond just thinking about our own individual energy use and started to have some conversations about how to think about our own energy we use in relation to other people in relation to the energy system in relation to community projects. So we're experimenting with various kinds of forms of visualization in this project and the purpose of the workshops is really to talk to people about how those visualizations feel, what it, you know, what kinds of ideas it brings up. And that's kind of the purpose of the today's conversation. So yeah, that's all.

Facilitator 1: Yeah. And have you today in the in this specific session, what we will do is we will discuss a little bit not your own data, but some mock data from from an installation and we will compare it with some other participants’ ones and we will discuss a bit about a communal solar PV and how you can coordinate around that. We're gonna use Miro. Have you ever used Miro before? No, but you're you aware what it is?

H7: Is it uh? Is it this thing where we can all point and yeah.

Facilitator 2: Exactly.

Facilitator 1: Like. Yeah, yeah, great it it's very simple and mostly it will be me sharing my screen. So I don't think it's very complex I think. But before I go there, I forgot to mention that I'm gonna ask you some survey questions and the workshop we give them out as a as a form. But if you don't mind, I will just ask you out loud.

[Redacted for Anonymity]

Facilitator 1: This is not the same. OK. Uh, I'm sharing a link in the chat. And I will also share my screen. Now this is where it starts getting experimental. Let's see. So this is Miro. Can you see my screen now?

H7: Uh, yes, I can see it. Yeah.

Facilitator 1: Alright, great. So this is uh, the Miro environment. It's just like, uh, if you right click and if you have a mouse then you can just move around. And it just has boards and and drawings and boxes and things like this which you can touch and move around as well you can. OK. But maybe I can start by explaining what we have here. The first graph here that you see on the top is an example of a solar generation. Well, it's a a solar curve anyway, coming from a an installation from [charity name]. OK, it's a little bit trimmed down because you can see it's quite low that it's from a a day in June. So it's quite sunny day with a bit of clouds here as you can see. And then it it kind of peaks out, this is the time. Can you see my mouse right?

H7: Yes, I can see that yet.

Facilitator 1: OK, this is time and this is power. So then this would be the actual the actual curve. And what we are doing here and what we were doing in the workshop is we were bringing the data from that you were annotating and and placing it on the curve. So here you have two examples from different people. This is real data from other participants. Uh, where you have a box for instance here that is a hob. Which represents that it took 90 minutes. So it's each of these blocks. Here is 1 hour, so this is 1 1/2 hours and it has the.. it's obviously it's averaged. So in total this was a 0.75 kilowatts, but then OK it I guess you as an engineer know that the hob doesn't always time. Yeah, exactly done. But for reasons of simplification, we have actually kind of averaged it out. So it looks like a block. But the the total consumption is correct, let's say as an area of these blocks.

H7: Yes.

Facilitator 1: And what we have brought here, I have made some boxes for you. OK, let's go to the next graph down here, which instead of working in the workshop, we would work first with the graph from June and then with the graph from March, I think we can work just with the March, the March 1. So March is less sunny, so the day actually instead of four AM starts at 7:00 AM and it actually goes up to to six when it gets dark. And it peaks, it's actually quite a sunny day for even for March, but it has like intermittent clouds, as you can kind of imagine.

OK, so this is the same, uh, data from the other people. We go at a bit fast here. Somebody at 8:00 AM had breakfast. The other person put their laundry at 10:00 AM and then started their lunch. At 5:00 PM starts the I guess the peak for the the. Somebody has a sauna and puts the laundry. And this is real data, I'm telling you, this is not a are made-up. I wouldn't have made-up a sauna, I think. Umm. And then while the other person here is uh, is putting an oven and watching some TV before preparing. Let's say the dinner. So they're both families. I tried to use families because I guess I I knew you also had kids. So both of these people that are here are two different families. We have showering, laundry and then in the end in the night the the dishwasher so I know we don't have your actual consumption data but if you see here there are some red boxes. And I was hoping that you could actually imagine like, one of the days that, like, I don't know, like yesterday or or one day that you did a dishwasher, you said you have a dishwasher. So I made one, and I put.

H7: Yeah, that's right.

Facilitator 1: Umm you can just click and drag and then it will go.

H7: How does that can does it? Can you see me clicking on it?

Facilitator 1: Uh, no, I don't see you yet. Let's see.

Facilitator 1: And the red one here.

H7: Can can you?

Facilitator 1: Yeah, I see.

H7: Ohh my clicking on the wrong thing. Can you see me?

Facilitator 1: Uh, what color is your mouse?

H7: My mouse is just normal.

Facilitator 1: I that doesn't.

Facilitator 2: Yeah, it doesn't show us. So I'm the I'm the red one that's on your screen that says visioning writer.

Facilitator 1: OK, so this is you are the green one and if you go a little bit down.

H7: I can't. I don't think I can. I can't move the green one.

Facilitator 1: You can't move the green one.

H7: Ohh am I doing something wrong.

Facilitator 1: No, I think.

Facilitator 2: Umm.

Facilitator 1: And .. let me think. If you just can you move your mouse normally, right?

H7: Yeah, I'm moving it now.

H7: Yeah.

Facilitator 2: It.

Facilitator 1: OK. So can you reach this area where I am if you if you zoom, are you in that area?

H7: No, I can't. I just can't.

Facilitator 2: Can you drag the boxes?

H7: It's like I'm ohh. Wait, hang on a second. No.

H7: All I can do is.

H7: I'm seeing it on now. I can't see anything. Ohh it can.

H7: But it's like you're just sharing your screen.

Facilitator 2: I've.

H7: Yeah, maybe is it in the chat?

Facilitator 1: OK. Is it maybe because I am sharing my screen and you're confusing the actual web browser web browser? Yeah, the link is in the chat.

H7: Ohh.

Facilitator 1: Yeah.

H7: Having clicked on the link.

Facilitator 1: Yeah, it's a...

Facilitator 1: The inspection.

H7: Ohh, that's fine. What's up? Sorry I didn't get that right. Sorry.

Facilitator 1: No.

H7: OK, sorry, back on track. Here we go. I can do it now. OK. Right. So it was an interesting process. Sorry for me because I realised … there we go. Sorry. Go. I can see this twice as we can. I'm not used to doing this. This is great though.

H7: I don't do this in my professional life. We should do this.

H7: It’s a good idea. So what I realized is that basically. This is how it did so. Put it [the dishwasher] on after going to bed.

Facilitator 1: You put it on after going to bed, OK?

H7: There we go. Or yeah, go to bed and then it goes on. That's what I did. What other the red ones? Have you got?

Washing. And then do that during the day.

And then cooking. This was all done. Basically I realised that whilst I used to be quite flexible, the advent of my introduction of my daughter and my life. I realised this is much less flexible. So yeah, this is probably about right. Here you go. Another cup of tea.

Facilitator 1: If you don't mind, I'm gonna just put them a bit higher because it's supposed to be additive.

H7: Ohh sorry. Yeah that makes sense.

Facilitator 1: No, no, don't worry. I should have mentioned it. So it kind of adds one on top of the other.

H7: And then here we go. Let's make some dinner.

Facilitator 1: Wait, sorry.

H7: Oh, here we go. Sorry.

H7: Oh if only had a sauna, that would be great, wouldn't it?

Facilitator 1: There we go. OK.

H7: Here we go. Look at this system. My warming up my daughter's milk, but great.

Facilitator 1: In the morning.

H7: Yeah.

H7: That's about right, yeah.

Facilitator 1: OK. And do you notice anything, any patterns with your own energy use or were you aware?

H7: Yeah. Well, what I realized, I wasn't aware of this, but basically like, there's no reason why. What I'm trying to say. The parts that I realised is that effectively we used Very little electricity in the summer when we weren't using the oven. That was what I realized and that basically this is quite representative of what we would use. And that umm, we do have like a heat pump tumble dryer but Uh, we haven't really needed to use that because everything dries so quickly. So like that's that's something we haven't had to use.

And the pattern.. The main thing that I realized that this curve made me think is actually this dishwasher [pointing]. There's no is that habit that we do it when we go to bed so actually I could do it another time. And if there was a financial incentive to do that, I probably would. So, but I just don't haven't done that. There's no reason to. So that was, that's what I noticed. And then I kind of quickly realized that actually all they're doing like you've got no, there's a base load and I'm haven't quite worked out what all of that is. Umm, but that's relatively smaller and it's just these, you know, it's just using the oven that was basically our main peak. So yeah, that's what I noticed.

Facilitator 1: OK. And what about here like you can see that, I mean at least I can see from from this graph from other people that there's a a cluster closer to the evening.

H7: Yes.

Facilitator 1: Right, it looks really busy and I guess that's because of dinners and things, yeah.

H7: Yeah. Yeah, I guess. I. Yeah. Again, we have like a small amount of electric under floor heating and that's something that will be particularly careful about this winter. Uh. And that would that would probably be a thing that we'd be that will be increasingly careful about and understanding how that works.

Facilitator 1: OK.

H7: But yeah, definitely the peak in the evening. Yeah, when we're everyone's in the house. Right.

Facilitator 1: So what we are imagining here is actually we're asking you to imagine a scenario where you and those two neighbors are your these two people are your neighbors and that you're actually sharing. You have purchased together a solar set of solar panels, like a installation, and you share that amongst those three households. So the way you would share it would be that anything, anything that is generated from solar, you would be divided by three. So and it would be free and extra energy gets paid from the grid and it would be around 30 per kWh and at the excess energy that gets generated by solar, it would go back to the grid for five pence per kWh, so actually quite lower And in in this kind of scenario, where asking you to to say what kind of to what extent would you shift some of these activities and which ones would do you think you would shift?

H7: I'm so, definitely I shift the dishwasher. Umm. And yeah, I would think about the washing, but all the food related ones there's no way we could shift any of those.

Facilitator 1: OK.

H7: I guess what you might do is go from oven to microwave. That's what that's the that's we'd probably just use the oven less. I imagine. Maybe I would not sure my. Yeah, I probably would.

Facilitator 1: Because of taste, you're not sure like your family would accept that?

H7: No, I think just because my wife will probably think I was overthinking about it, overthinking it. And just be like, yeah, whatever I'll pay 20pence to use the oven.

Facilitator 1: OK. So is it the financial incentive that motivates you more for the?

H7: Uh, I think it's the my… If you gave me this graph to follow then I would want to follow it. Does that make sense? It's like that, but that's a part of my personality that isn't all shared with everyone. Does that makes sense.

Facilitator 1: Do you mean that you like goals and you try to put to to match that, let's say.

H7: Yeah, I think so. And you know like, yeah. Yes. Yeah. Yeah. And I think it's just inherent into the work that I do as well and that's what I'm kind of thinking about on a day-to-day basis as well. So like it would just be, yeah, that's what you'd do.

Facilitator 1: OK.

H7: So, but my wife got other things to think about, which is fair enough because we can't all think about that so. So yeah, and especially for the medium investment with my neighbors, then this is what we'd definitely do. Yeah, it's a lot more positive than you know what's gonna be going on in everyone’s living room, which is the cost. You know, on the smart meter just going up and up and not being able to do much about it. This is a positive message. Like ‘use it now! It's good!’. Whereas this [smart meter] is very negative, I think.

Facilitator 1: OK. Do you own a smart meter?

H7: Yes.

Facilitator 1: And do you like? Uhm, how do you say? Uh, consult it often.

H7: Yes, I use the [charity name] system. I subscribe to that and use it. I think it's great. Amazing. It kind of shows you how far a lot of commercial systems are, like how far behind they are and stuff. But anyway, so I use that, but not not regularly. But again, it's a more of a vocational interest. You know, like can we get.. You know, we look at kilowatt hours per meter squared per year and buildings and set those targets and you know my house isn't very big and there's lots of [inaudible] in it, and actually it's apart from the electric underfloor heating which we hardly use and the tumble dryer basically everything else is a kind of minimum. Well, I guess that the dishwashers, you could argue as a luxury. But as in you know, if you bought a new house you'd expect to get that as a minimum. Basically or I would anyway. So basically we're kind of like it's a good test, it's all our heating apart from that a tiny bit of electric on the floor heating is gas so basically it's a good measure to see if we can do it. And so we look at these targets and like, yeah, you can achieve that many kilowatt hours per meters squared, but the house needs to be empty most of the time. You know, it's that kind of thing. And then you're like, is that the right metric? I don't know. So. But we're still in that world in this the best we've got at the moment. So sorry, that's just my again. So yeah, I do use it, but I think I've lucky enough to have a fixed price gas contract until November the 20th and so I think I'll start using it a bit a bit more. It coincides with my wife at the start of my wife's maternity leave as well. So.

Facilitator 2: Ah, OK.

H7: That's hard, obviously particularly hard. Yeah, I've I've said that we might get an electric blanket for the sofa, but I'm not sure that the that's not an idea of comfort that she's she's used to.

Facilitator 1: With the newborn also.

H7: Yeah.

Facilitator 2: Yeah. No, that's quite stressful.

Facilitator 2: So can I? Can I just ask another question about this graph? So you we just asked about what you can see in terms of your own consumption and we, but we were kind of have this scenario that you're sharing the solar panel with your neighbours. So are there any, do you have any reflections or thoughts about what about other people's consumption and what else you can see them doing?

H7: So this is the basis. Sorry so so I know you you outlined the kind of financial basis, but basically it's not in this scenario: Umm, it doesn't matter who uses. There's no. I don't win from. If someone else is using all that through his electricity, then I just lose out because I haven't used it. Is that the idea?

Facilitator 1: Yeah. So the you won't lose if somebody else gets more, but because when you need it, you will be divided by three. But you know, way somebody else would benefit more if they're using more.

H7: Ohh I see. OK so.

H7: Uh, I would. You know, they they need to. They need to have their saunas at lunchtime. And they also need to wash their dishes in the daytime. That's the. But actually, there's no no one's losing out because we're just not using enough.

Facilitator 2: Exactly.

Facilitator 1: Yeah.

H7: Yeah. So it's pretty Yeah, there's loads of room.

H7: So yeah, share it with more neighbours. Maybe that's the answer.

Facilitator 1: OK, so I was actually going to go another direction before you share with more neighbors, I was going to say like you are you say for instance the, the, the person that doesn't sound should do it in the midday. But if suddenly everybody does everything in midday, then that's also gonna go over the graph right?, over the availability. So somehow when you shift these activities, there needs to be some kind of coordination. And how do you imagine yourself to actually coordinate these shifts with with these people?

H7: Yeah, don't know. I guess you would just do. I would just go. Umm. We're gonna set our. Set-up a set-up a. To help our dishwasher or washing machine for example. So alright, you're gonna put your washing on at 11:00 o'clock. That's your slot, and my slot is at 1:00 o'clock. That's how we're gonna do it.

Facilitator 2: To have a kind of timetable so everyone knows what they're at, yeah.

H7: Have a time table. Thank you. Yeah, that's much better. Yeah, exactly. Timetables. Yeah.

Umm. And that would probably work. For our street, because there's loads of people with kids, so. You can do. You can do that. I wouldn't have done that three years ago. No way.

It Wouldn't have worked.

Facilitator 2: So what's changed?

Facilitator 2: Having having to be there, yeah.

H7: Just have to be in the house. We're in the house a lot more. Yeah. Not only having to be there, but we get the, you know, we get. That's the wrong phrase, isn't it? We get the we are more attached to the home than I was before. And so it means that I'm my. Yeah, I have a much more regular schedule than I than I did in the past.

Facilitator 1: Uh, what do you imagine to use some media to coordinate with these neighbors like I?

H7: Ohh yeah maybe, just probably WhatsApp.

Facilitator 1: OK.

Facilitator 1: So your imagine looking let me run this scenario through. So you have purchased this solar panel with another two neighbors and you, you may you have a WhatsApp group and then you decide that OK, things like the laundry or the dishwasher. I get the 11 slot, you get the 1:00 o'clock or something like this.

H7: Yeah.

Facilitator 1: Yep? OK. Umm do you think you might want some..? Uh, how would you want to get info about the solar generation? Because in this scenario you don't get it in in any way, right?

H7: Ohh.

Facilitator 1: So you think that's not necessary or?

H7: Yeah. No, I think that you can see the clouds if that's if that makes sense. You know, you don't wanna be the neighbour stuck with the 5:00 PM slot, but. Umm yeah. If if you can, you know, share the bit in the middle, then they'll they'll be fine.

Facilitator 1: OK. So then you would kind of see outside see how it's going and then?

H7: Yeah. Ohh do you know what if if this was.. sorry? I'm thinking about it. What I would do is if this was, then I would just set-up an electric immersion heater and set it to maximum umm and control it on the basis as any you know like the sappy thing. That's what you want to do and just heat up a hot water storage with any remaining basically. So. That's one person being greedy, so you don't. You don't want that, but. Yeah, that's..

Facilitator 2: Let's you get into a kind of collective hot water system as well.

H7: Yeah, exactly. Yeah. Yeah. But yeah, that's that's what I'd probably do. It's cheaper than a battery, right? So. Sorry, I'm just thinking out loud.

Facilitator 2: Yeah, that, that it's an interesting suggestion.

Facilitator 2: Can you see any? So can you see any.. in a way that's a solution to an issue that might emerge, emerge, which I guess is about not not maximizing the use of the energy that's being generated, but can you see any other? Are there any other issues that you could imagine might you might have to confront if you in this scenario that we've put forward?

H7: Yeah, I think just, you know, putting people. Yeah, you combining it too much. as in like you don't actually get the 11:00 o'clock slot because someone else has decided to bake a cake, which is also totally fine, but out your completely out of control, so that might be quite annoying. You come back from work just to put the washing on and or whatever, or you set you go to work and set the timer you know, for starting in five hours time, please. And then actually someone said ohh texted you and says, oh, we can't do that time because his mom's birthday tomorrow. So making a cake and saying that. Oh, for God's sake, I'm already at work. So yeah, definitely it's not not infallible. But it's better than. Better than nothing.

Facilitator 2: Better than sending all of the electricity back to the grid.

H7: Yeah.

Facilitator 1: Umm. I'm gonna give you some other ideas that have come up and maybe you can reflect about what coordination ideas I mean. So one other potential would be that there would be a live signaling of the generation the generation at each moment. So you would know that. OK, now there is a lot the imagine it as a I don't know like a counter or anything like that that tells you that the now there is quite a lot and then maybe at that moment you can you can use it and then it kind of shows the availability. What would you think about something like this?

H7: Yeah, that's great idea. Yeah, I guess it's like the. It's the kind of alerts like you get with our I've never used that octopus Agile tariff, but that's the kind of thing you'd get, you know, to prediction now it's gonna be really cheap tonight so charge up your car. So yeah, that's a really good idea. I yeah, definitely would respond to that. But it's almost like it would be so easy to overshoot that cause everyone just shoots all their stuff in, and then because I think this is only at three kilowatts. So like, yeah, it would be really easy to. You know, like the dishwasher drying cycle slept pretty hot. So like, you could easily overshoot that, you know, even have at the momentarily, but.

Facilitator 2: There could be too. It could be too effective in getting everybody to switch on at the same time.

H7: Yeah.

Facilitator 2: And you’ve also mentioned the.. So I think when we were talking about the idea of the signal, maybe there's a kind of instant signal of actually what's happening right now. But I think you mentioned that Octopus version is like more of a prediction of what's gonna happen in the next 24 hours or so, there's a slight difference there. So which is, which is interesting. So maybe, you know, do you think that you do you think they would have different different kind of outcomes in terms of? And where whether you might be able to coordinate more easily with a predictive system, for example.

H7: Yeah, maybe. Yeah. The coordination thing is just just really difficult, isn't it? I mean, I mean, that's why you're talking about it. So yeah, I don't think either.

Facilitator 2: No?

H7: Yeah, it doesn't really help really. It's like you need an alert to say your neighbours are out and there's loads of electricity, so please use it. Is that and thing? And then you're like, let’s just turn everything on.

I'll just.

Facilitator 1: Work on this one you just said now, so would you be comfortable informing your neighbors that you are out?

H7: Yeah, I I mean personally, yes. And my current neighbors, maybe the next neighbors don't know as in. But right now that would be totally fine. I mean, they would probably know if we're home or not. So just by hearing them because we're too close, so. But yeah, no, that's fine. But maybe not next time.

Facilitator 1: Umm do you own your house?

H7: Uh, yeah.

Facilitator 1: Yeah. OK, sorry. Yeah, just asking to understand what you mean by the next neighbors and yeah.

H7: Ohh yeah, but yeah, exactly. So you know if the next door sell up and go somewhere else and we get some new, you know that know who knows.

Facilitator 1: Yep.

H7: Yeah, I think I'm talking from a position where I have very good relationships with them, so it's easy to say that, but.

Facilitator 1: Do you think that if you didn't know them then it would be, something you would be comfortable sharing or not?

H7: Yeah, I think so because the, the, the benefits are just so.. Yeah, I think it would be difficult if someone didn't understand and didn't like, didn't didn't, you know, didn't understand it or just took it [the energy] all if that makes sense. That would be really frustrating. But and maybe that's what they think of me as I optimized my immersion heater to do that, you know that's a bit unfair because I'm taking all the benefits that make sense and even though. Anyway, I think yeah, I wouldn't maybe be the best. The best neighbour, but then I hopefully I'll be conscious of that.

Facilitator 2: So it could could require some negotiation.

H7: Yeah, I think so.

H7: But maybe you kind of spurring everyone on to share it, but yeah, definitely it would be fine. It would be just be difficult if you if you have someone who consistently couldn't understand this. That would be really difficult. And couldn't understand the benefits or was like it's supposed to be cheap, but I don't know why my electricity bill. So and then you're just like, ‘oh, you're just using this wrong’. So I think it'd be really easy and it's quite difficult. You know, like having problems with neighbors in the past where you know, they're they're drainage overflow is pouring out over our windows and you're like the drainage is broken. And then they're like well, ‘there's no problem inside the flat’ and I'm like ‘ohh yeah, that's what the overflows for’. But you know, it's designed to tell you there's a problem that you don't understand because there's no problem inside in. You're kind of just like, you know, communicating those really simple issues can be really difficult, especially when people are unexpected and they don't understand what's going on. So they.. feel scared and don't always react very well. Umm. And actually you're just trying to help but. You know that doesn't, doesn't always work. So yeah, I think it would be quite easy for it not to be understood and then make it frustrating.

Facilitator 2: Yeah, that basis, it's an interesting question about whether you would need, do you think you'd need somebody to take this sort of like responsibility for this shared resource rather than distributing the responsibility equally across the households?

H7: Yeah, I think it would be much easier if, I don't know if there's a way that you could bid for different bits or something. And so you'll like given exclusive use of like you know you've got a kilowatt for three hours. And that's your allowance. And maybe it'll be cloudy, but you know, and then you can, like, bid for the bits because obviously like, you know, they'll be bits are more valuable, but actually you might live in a block of people who maybe they worked nights shifts, so they can do the holes the whole lot or, you know, and you're like, maybe actually the 6:00 PM bits really valuable to some people, but actually for other people it's not and so it's kind of like being able to bid for it and then naturally going this is your exclusive use. And then maybe you know you change that over time or something that would be really useful because then you're not restricted by our, you know, our Brenda next door, she's put on her immersion again at the wrong time, or she's forgot to switch it off. ‘Switch it off’. You know, having to phone her up and say, ‘why can't I get any power out of this?’ There's that kind of thing. So if you could. Yeah. If there's a way of doing that then that I think I'd be really useful.

So you're relying on a system to kind of give you that portion. I think, I don't know if it's possible, but that I think that's the because otherwise you know you're talking about different languages and different understood level of understanding and then it's I think it.

Yeah, especially when that. Yeah, it's it's hard when you. In the places the transient population, it's particularly difficult.

Facilitator 2: Do you? That raises another question as well, which we were asking about whether you mind people knowing if you're at home or not. Uh, do you think in these, you know, these conversations start to introduce the question of how you use your energy in your home, do you think you would mind sharing that information with neighbors?

H7: Uh in my. No, I'm not worried about that. Umm, but I think that. We used to live in a flat.

in in you know in central London where there was a really transient population and then there's a bit more, it's a bit, it's a bit more anonymous and a bit more

People are a lot less friendly and. You know and so I think it would be a bit weird, a bit more, at least against my cultural. That gets the cultural norms to do that.

Facilitator 1: Gains the culture enormous to do that. So you think you would be OK with it, but it's it wouldn't be seen as something that others would do or.

H7: Yeah, it's a kind of like, uh, like where I live now. I know all my neighbors know their names, know all their kids are called. And like, you know, knowing the birthdays are.

Facilitator 1: Yeah.

H7: Whereas when I lived in a flat in [Name] Street, I didn't. I knew, you know, after a few years.

‘See you later. Thank you’ I didn't , you know, after three years of living next to someone, I got to know their names like. Umm, so it's just different and that's the different. I've maybe that's a London another thing. But yeah, it is. It's very different.

Facilitator 2: So it would be a bigger heap having to share, having conversations about how you use energy compared to people who already know quite a lot about your lives and.

H7: Yeah, exactly.

Facilitator 1: And what about the another kind of variation would be that you wouldn't really need to coordinate as much in person, but you would let like machine learning or like devices to do the coordination for you. For the most part.

Facilitator 1: So I mean, there's two scenarios here. One would be like more futuristic where the dishwasher appliance to appliance can discuss with each other for instance and kind of coordinate to to start. But it's also a little bit more short term where like an AI application can kind of suggest that now is the best time to do your laundry or or to put the dishwasher and then it would kind of do do that almost automatically, right?

H7: That would be great. Yeah, really good.

Facilitator 1: You would be comfortable with leaving such kind of decision making, let's say to to the devices.

H7: Yeah, I think so. And that would be really useful as like in the Community element. Umm. So yeah, definitely comfortable doing that.

Facilitator 1: In which ways do you think it will be useful? Sorry.

H7: Ohh in that. I don't all. Doing the washing isn't always on the top of my priority list, for example, and so if I had someone going do the washing now it's it's free. I would be like great. Let's shove some stuff in the in the washing machine, you know, that's what I would do. The dishwasher is a bit different. That would be a bit annoying, I think actually in I'd find that quite annoying as in like having to load it. I do have a dream of only Of not having any cupboards and just having two dishwashers. So that I never have to take things out the dishwasher and put them away. So I just have two set A and set B and you just. That's what happens and maybe this AI thing will be great for that. But I haven't.. That was a dream I had when I was about 14 and I haven't realized that yet. But you know, it's still. I've got plenty of time to make that possible.

Facilitator 2: That's great.

H7: But other than that, it would be just like, oh, that's annoying because I've only got. You know, an egg cup and a spoon from my breakfast in that in that visual show. And so there's no running any point washing it.

Facilitator 1: Yeah. So some devices are easier to do than others, I guess, right?

H7: But my merchant heater the AI on that. That would be amazing. That would be so good. I'll be really good to do that. That would be really good and you know, I could have a button that says I'm on holiday, like give it to the neighbour, please. And that would be great too.

Facilitator 1: Sounds quite open, right and wanting to share the the resource. That's that's good.

Facilitator 2: Yeah.

Facilitator 1: Umm, I'm I'm conscious of time, so I'm going to move to to the the next part.

H7: Ohh.

Facilitator 1: Let's see if I can. That's another maneuver here. Can you still see my? My, the original screen? Or can you see some other screen?

H7: Uh, original screen.

Facilitator 1: Right. And and wait. And now?

H7: New screen.

Facilitator 2: New screen, yeah.

Facilitator 1: New screen, perfect so. So what we have done here is like we simulate a little bit the idea of adding a battery to to the conversation to the the solar panel. So here you are the red one. I I put you randomly to how I thought it might make sense to. Yeah. But the other colors are the same people with the same kind of distribution. And the gray here again is is the the solar generation and what we have here is 2 graphs of. This is everything that the solar, uh, the PV has been generating and this is how much of it has been used. And this is what has been used directly. So this was exactly the scenario from before. So you've saved £3.00 and this is what has been consumed from the grid, which is like basically you've paid 5 and this is a battery of 0. Then if you start adding a battery then what gets consumed by a battery kind of increases until it reaches a point where the batteries too big, let's say. You don't need a battery so much because you're just storing extra and you cannot.. basically you you don't need it. That's it at that point. And this 20 kilowatt hours is is a huge battery, I guess you. Yeah. So it's not really.

H7: Half of it's half of our car.

Facilitator 1: Exactly.

Facilitator 1: So this is a. Uh, let's say more realistic version of of of a battery of sharing between the neighbors and what do you how do you think the battery could change the coordination in in a scenario like this?

H7: I guess it just. It just expands the well no it doesn't. What you wanna do is extend the daylight hours, really in the night time but it doesn't wouldn't really work at that cause it's still in the summer.

Facilitator 1: This is in March, right? Yeah.

H7: In March, I came in March. Yeah. So it means that you know that 6:00 o'clock.

Peak is, you know, you can still do that on solar, which is great. Ohh yeah.

Facilitator 1: Here I mean this is where the solar ends and these are all outside like like in the previous graph.

H7: Yes. So yeah, that's the that's the kind of peak I mean, that's the peak for me and that's what it's showing on there as well, so yeah, that's what you're doing is allowing your cooking dinner on the on the battery.

Facilitator 1: And how do you think that would influence the coordination?

H7: Yeah, I guess it would. Relax it a bit. And then it's really when it's full, you really want to use it, then it's full on something outside, like you've got to like. There you gotta use it.

Facilitator 2: And you met you mentioned the idea of an immersion heater.

H7: Yeah.

Facilitator 2: And obviously there's some similarities between that and the idea of a battery. Can you see different kind of pros that what? What can you see in terms of different pros and cons of each of those ideas?

H7: The I think the battery is a lot higher tech and like more likely to break. That's that's how I may not be right but. I've, the immersion heater is pretty well understood. So my plumber would be able to do it. Umm my electrician wouldn't be able to fit in a battery system in. But they know what immersion heater is and they can do that. That's good. Yeah, that's. But obviously you can only that batteries a lot more useful because you can use it for loads more stuff, whereas actually like I've already put a low flow shower head on my shower.

So it's really It's really pretty efficient if I'm using the shower. So there's only so much benefit I'd get out of that. But anyway, it's kind of like I think in my mind, the reason I say it is because I'm like I can't afford a battery, but I could afford it in the merchant heater so.

Facilitator 2: Yeah. So cost as well.

H7: It cost. Sorry. Yeah, that's the one.

Facilitator 2: Yeah, yeah, yeah.

H7: And I could afford to do that and it'll be worth it. Was the battery is like, you know, the payback would just be too big. That's in my mind, and also like. I try, I don't if it's worked yet the way that we look at procurement in projects effectively, I'm like right instead of reducing by one solar panel, I'll put one of these things ‘my energy thing’ control immersion controller for what it's called Eddie maybe I can't remember, but I'm like, let's put that in the project because it's worth. It's worth a lot. Because when we're putting in heat pumps

Uh, we cylinders? You know, we're doing every project will be a heat pump project now, and that often means individual water storage and so I try and put that in. Umm so that if people aren't out and they don't have a system like this, then they can at least their water gets hot and it's a lot and it's a lot cheaper than a battery.

Facilitator 2: Interesting.

Facilitator 1: OK.

H7: Oh, I think it is. I think it is.

Facilitator 1: I don't know. [Facilitator 2] Is there something else you wanted to to to ask at this point?

Facilitator 2: I think given the time, we should probably move on to just sort of talking a bit about the visualizations.

Facilitator 1: Yeah, exactly. OK. So kind of we in this project we use kind of visualizations and well not various formats, but you saw different types of visualization. So you you had one that was the the the monitor that you had at home where you were annotating, you have the battery one that you see here and you can also you also have the the the more blocky version that you had here in Miro. Can you kind of reflect that little bit and compare them to each other, or comment a little bit what you what you think?

H7: I prefer the curve one.

Facilitator 1: This one.

Facilitator 1: What do you mean the curve one?

H7: Ohh.

H7: The one that was sorry, the one that I was looking at on my.

H7: Oh, sorry you're comparing. Sorry, I'm comparing the wrong things.

Facilitator 1: Number.

H7: I was talking about the one that was on you know, when you were getting me to annotate it and there was like a linear curve, not a linear curve, but there was a.

H7: Like a sinusoid.

Facilitator 2: The chiller July 1 rather than the March 20 you mean.

Facilitator 1: No.

Facilitator 2: The 10.

H7: No, I mean that this is.

Facilitator 1: The actual annotation.

H7: Uh.

Facilitator 2: Ohh I see. I see the annotation that you were doing. Yes, yes, yes.

H7: Sorry. Yeah, the yeah.

Facilitator 2: Yeah.

Facilitator 2: That's OK, that's OK.

H7: And that? Sorry, I've lost all my words. I'm getting ready to go on holiday. But the.. This has got discrete intervals in it and I'm like, well, I know that's how half-hourly meter data is often [presented].. but that's not what's really happening. Something sense, it's like.

Facilitator 1: So you prefer the granularity to it?

H7: Yeah, because then you can see that, you know, I think this is where, again, I'm probably taking it too far, but you know, ‘what's that, spike? What's the dishwasher or or like, there's hot water gains dishwasher’

So it's just gonna. I was just gonna say why? Why is that interesting to you?

H7: Ohh, because I know that because if it's going above the solar load then I'm wasting the solar. So that I need to be careful about that. And this doesn't I don't think conveys that and. You haven't gotten instantaneous. This isn't showing the instantaneous peak, which would be bad.

Facilitator 1: Uh, I'm not sure if you saw, but your your data that you I hope you downloaded it from the.

H7: I yeah. I haven't actually done because I got your message when I was in the office, so I haven't downloaded it, but.

Facilitator 1: No problem. But when you download it, I mean we also collected in two minutes.

H7: Ohh.

Facilitator 1: So we visualize it in half an hour, but it's collected in two minutes. So when you download it, you are able to see it in that level of detail of of actually the different devices having the spikes, like the the the cycle of a or dishwasher for instance, or along which is. Is that something that you would find more interesting? If I understand correctly?

H7: Yeah, definitely. Yeah, yeah, yeah.

Facilitator 1: OK.

H7: Uh, and that's partly because I haven't actually spent the time to understand where the base load is. So like, you know, I look on the [charity name] thing, I think that only that just takes data from the smart meter, so it is every half an hour and so I can see that I've got I don't know, 180 watts of you know, stand by use, but I haven't actually worked out all that is. And that that will help me.

H7: I think what I'm interested in, and I don't think that exists yet, is a kind of the way of using that metering to try and but work backwards to understand what is using what so like At least it can make a guess. That makes sense. And then if I'm making any sense that any sense so like? It can see. So your dishwasher has got a very consistent pattern.

Umm my meter knows what electricity it's using, but it doesn't know what apparatus it's using when. And so like a suggestion saying ohh you've got a time of use tariffs, why don't you try? You know how to optimize it, save money or why don't you put your dishwasher on? A bit earlier, or something that makes sense because at the moment, unless I'm going through everything, I'm not understanding what is on. You know in those big use patterns and so it's kind of like a vegetatively. The big problem that we have is that metering is at the best level is done at a circuit level. So you know, you might be able to see what's on a big circuit, but that's a lot of stuff on one circuit and so you don't know what's happening, but obviously it's not a house, it's done on a whole house basis. And so if you have a really big house that's not for us, but my my inlaws have a massive have a big house, never really high electricity use. And that's partly because of the car charger in the, you know the builder installed loads of underfloor electric heating cause it was cheaper than the wet stuff and they should have done. But it's really impossible for them to work out what they're actually using it. And it's kind of like if there was a way of intelligently separating that to use the meter to kind of say actually this is how much we think our dishwasher being used. And actually, you know, let's test that it is who this will show, you know, run it for run it now turn it on now and then you kind of gives you that feedback. You know, I think, yeah. And maybe this exists or not. Or maybe this is what machine learning is.

Facilitator 1: Uh, they are actually, uh, another colleague of us was telling us of a project that is starting to to work, but it's still on a research basis. So there are trying to kind of recognize patterns of devices. So what you did with annotations, it doesn't work really well yet, but it could kind of try to to figure out the patterns of of different kind of devices. Yeah.

H7: You know, and that's are you taking a picture of the oven and then it goes ohh, I know you've got this like you've got a four kilowatt oven or whatever, you know, like we've got a also like one thing that we could do is we've got like one of these pirate pyrolytic ovens that like is it like gets really hot to clean. And so that's gonna really high and that works really well. Actually. It's amazing never have to clean the oven again. Alright. It's great. I thought it was gonna leave it rubbish, but now I'm really pleased with it. But that's got a really high electricity use, obviously. And so that would be one thing that would be like ohh do this now, you haven't done it for a month. Ohh great. I need to do that.

Facilitator 1: Yeah.

H7: Umm so sorry but yeah, I think that metering thing is really powerful because these like in home displays are great and they're gonna show people. But it's not. It's like the the changing the behavior thing is really difficult. Obviously, I mean that's what, that's what you're thinking about.

Facilitator 1: I don't know if you had some questions or any other feedback you would like to to share with us.

H7: No, I just think it would be. Do you know what? It's kind of like. It's almost like this. I need to that I would really benefit from doing this in six months. You know in the in the winter season, because it's just totally would be totally different. And I've realized that like what is fixed and what isn't. And anyway, yeah. And I think like it can just get really complicated as you basically as your house gets bigger and you add more stuff in, obviously. Yeah, I think.

But yeah, I think this is really powerful and it could be really useful. And this stuff like.

So like to us, we often see there's, like, these exhaust air heat pumps that if you've written understand those to look at those systems. So it's like mechanical and then mechanical ventilation, heat recovery unit with a bit of start on top of the water tank. And this is like a would be a really good way if this is automated of just reducing the costs of those because there's a risk in those that basically you're immersion heater runs to compensate for the heat that you're taking out if you're not there. So this would be it, and, but otherwise they're really good because they're, like, really low embodied carbon. They're the smallest thing that you get one person to maintain them. They know they do the, the plumbing, they do the and the ventilation all in one go. You've got one person going to see one thing instead of two people. And so that's a massive, massive benefit. And this is a really good way of, like, linking that up. And so from a like reducing that risk would be massive, you know, and then you've also obviously in summer you've got like these and then we're looking at like ambient loop systems which give a bit of cooling and so, like a day like this, if there was excess, a bit of excess umm, you know and that and that's come from a real problem where. You, you, you know we don't wanna put cooling into social housing because that doesn't work. But actually you have a 10 story building and then the design decision is and we pushed this. It's like oh, do you want your window to open fully? Or do you wanna restrictor? And obviously if you are saying that, Oh well, it's gonna be families in there. There's gotta be a restrictor. This is that right, then you can't get the heat out, how you can get the heat out then? you know and it's basically that's not possible. It's very hard to do that. And then you end up designing a fixed ventilation panel that you can open. But that’s not always possible and it can make the fabric (?) worse. So if you look at the weather now and think is there a need for cooling in social housing? Well actually yes there is. Otherwise you're someone's grams gonna die, you know, basically and so actually using this, you know, but the the big problem with that is just the you don't want to even before all of this stuff, you don't wanna to put a system in that yeah provides you cooling, but only if you've got you can afford it, you know. So this would be really helpful and it would just add a massive level of comfort cause the cooling's really cheap and the energy is really cheap and because the it's not a it's not cooling a massive luxury penthouse with filter sealing windows, you only put the cooling in the bedrooms. You don't do it in the because the. The the living rooms got, you know, a big open room balcony because they've all got balconies and that outside space. So you don't put it there. You just put it in the bedroom so the door stays closed and you make the system as small as possible. So if they open that door, it doesn't work. Or if they open the window, doesn't work. So it's a really small amount of cooling. And you make that really tiny, which means that actually it only needs a tiny bit of electricity to work. And so if this could come through that, then that would be amazing because like, you'd have a day like this and you'd have someone who's. I was really nice custom environment to go back to and it would make a massive difference, so sorry.

Facilitator 2: Hmm, interesting I guess.

H7: It's it's a really. Yeah, it's really it's potentially really powerful. So, but this is great. So yeah, thank you.

Facilitator 1: OK.

Facilitator 2: Great. Yeah. Thanks for your reflections. I really, really interesting and you know the the project is gonna be running over the winter as well. So some of the things you've been saying about the difference it will make to be doing some of this work at during different seasons, I think is is really helpful.

H7: Yeah, no, maybe there might even be. You might even. He might have a different electricity market. Who knows? You might. You might have a price signals.

Facilitator 2: Well, exactly. We're working at a ship. We're working at a changing contexts.

Facilitator 2: Yeah, yeah.

Facilitator 2: Yeah, yeah, yeah.

H7: Yeah, maybe you'll get those text messages or whatever. You know, it's cheap. Do it now. You've got a smart meter. There's gotta be. Yeah. Anyway. Right. Have a good evening. Thanks for your help.

Facilitator 2: Yeah, you too.

H7: OK. Bye bye.

Facilitator 1: Great. Thank you. Bye.