

TRANSCRIPT_GATEBURTON_ISH3_SESSIO N2_1_23082023

00:03

Good morning ladies and gentlemen. It is

00:07

10 o'clock. Time for me to resume this hearing.

00:14

Where we go any further, can I just confirm that everybody at the back of the room can hear me?

00:19

Thank you very much. Also, Mr. Cook, can you confirm that the livestream and recording of the event has commenced?

00:27

Thank you very much

00:29

like to welcome you all to this second session of issue specific hearing three on environmental matters in relation to the application made by get Burton energy Park limited for in order to grant development content for the gate burden energy Park project.

00:45

As noted at the opening of the AArch yesterday, my name is Kenneth stone and I've been appointed by as the examining authority for this application.

00:58

My role is to examine the application and to report to the Secretary of State for energy security and net zero with a recommendation as to whether or not development consent should be made. The application seeks consent to construct, operate and maintain and Decommission ground mounted solar built photovoltaic panel arrays on site storage and associated infrastructure. The associated infrastructure includes but is not limited to access provision and an underground 400 kilovolt electrical connection approximately seven and a half kilometers to the Cottam National Grid station.

01:36

Planning inspectorates case manager for the application is Robert Cook, and is supported by Case Officer Steve Spencer BARROWMAN, please talk to these members of the test team. If you have any issues or need any help with today's events,

01:55

got a couple of housekeeping matters. For those of you that were here yesterday at the start of this is ah, I have to run through these again. So apologies for the repetition. For those of you that weren't I will go through Lucia relatively quickly. First of all, any devices, phones anything of that nature, could you please turn them off, turn them to Silent

02:19

cases of toilets and other matters toilets right through the double doors in the foyer on the last terms of fire alarms. Again, we weren't expecting any fire alarms today. I was told at the start of the week that there is a fire alarm test on a Thursday morning. But that is normally conducted and over and done with so I assume we're not going to hear one this after this later this morning. But if one does go off, we assume that it is a proper alarm.

02:49

access emergency access is out through the door here so into the corridor I that door down the stairs and into the carpark.

02:58

Today's hearing is being undertaken in a hybrid way meaning some participants are present with us at a hearing venue and some are joining us virtually using Microsoft Teams will make sure that whoever you have decided to attend today you will be given a fair opportunity to participate. If you are participating virtually and you wish to speak at any point in the proceedings, please use the raised hand function

03:22

and I will invite you to speak at the appropriate time. Alternatively, please turn on your camera so that I can see that you wish to speak.

03:31

The hearing is being both live streamed and recorded. And the recording will be available on the gate Burton energy Park page of the national infrastructure website shortly after this hearing.

03:42

For the benefit of the recording, please can you can use present ensure that you speak clearly into the microphone stating your name and who you are representing each time that you speak.

03:58

For those people who are observing or participating remotely, in order to minimize background noise, can you please make sure that you stay muted unless you're actually speaking?

04:11

A link to the planning and spectryx privacy notice was provided in the notification for this hearing. And I assume that everybody here today has familiarized themselves with this document which establishes

how the personal data of our customers is handled in accordance with the principles set out in the data protection laws. Please speak to the case team. If you have any questions about this.

04:32

It's very unlikely that I will ask you to put any sensitive personal information into the public domain. And in fact, I would encourage you not to do that. However, if you feel it is necessary to refer to information that you would otherwise wish to be kept private and confidential. It should be in a written form which can then be redacted before we publish it.

04:52

Again, please talk to the case team about the best way to do this

05:02

In terms of the agenda, we've had a number of

05:07

meetings, preliminary meetings, open floor hearing meetings, other

05:12

things. And those are either on the website, or shortly to be published on the website. And, obviously, there's a lot of the information already in terms of those matters.

05:26

And

05:28

today, we're going to focus on specific matters, which are set out in the agenda. And if we could just put the agenda

05:38

on screen. And if we can just scroll to session two, we've got the bottom session to show that there at the bottom item seven, which is basically where we will have the substantive part of today or this morning in

05:53

terms of system substantive matters, the overall agenda is split into three main parts, which I will hold as three separate sessions.

06:05

So yesterday, we dealt with landscape matters. This morning, we will deal with carbon saving. And then this afternoon, there's a series of other environmental topics.

06:19

I will plan to take short breaks mid morning and mid afternoon during the various sessions, and there'll be a lunch break between sessions to Session Three.

06:31

I will conclude the session as soon as all relevant contributions have been made and all questions asked and responded to. But if the discussions can't be concluded, it may be necessary for me to prioritize certain matters and defer other matters to written questions. Likewise, if you cannot answer the questions being asked or require can to get further information, then please indicate that you need to respond in writing.

06:58

When we take breaks, those of you who are active who are participating virtually, please can you ensure that your cameras and microphones are turned off during the breaks?

07:09

I will now turn to introductions. I know a number of us have previously introduced ourselves but we do have different participants today. So we do need to go through the process of introduction so that everybody understands who everybody is. So firstly, can I turn to the applicant?

07:26

Thank you. Good morning, sir. My name is Amy Sterling. I'm a Senior Associate Solicitor at Pinsent Masons. I'm joining my right with Mr. Gary Phillips, who's a Partner at Pinsent Masons. And on my left by Mr. James Hadley bond is a project development director at low carbon. So given the nature of the agenda today, we do have multiple experts here with us in the room and also online. So if it's okay with you, we'll introduce the experts from session to first and then this afternoon. We're at session three those experts couldn't answer it seems as if it was starting online. We've got a Mr. Ben money. Mr. Muddy is the climate assessment author and he's an associate director at AECOM. I'll pass along the table for the experts in the room to introduce themselves

08:14

Good morning sir. Mike Carter, engineering leads skyray engineering

08:25

Good morning sir. My name is Simon Garrett. I'm representing the applicant on matters of energy need.

08:38

Morning Sir, my name is Paul Gregory. I'm representing the applicant with regards to battery safety and best systems

08:53

Thank you very much.

08:58

Okay, can we then move on to the other people organizations and firstly, can I hear West linty

09:05

it's good morning sir. My name is Samuel Shaikh. I'm of counsel I am instructed by Miss Martha racists to my left from Legal Services Lincolnshire. To my immediate left is Mr. Russell Clarkson, who is the development manager. And to my immediate right is Mr. Alex Blake, who's an associate director Atkins.

09:31

Thank you very much.

09:36

In turn to Lincolnshire county council.

09:40

And the sir I'm Neil McBride at Heller planning it's Lincolnshire county council. And I'm joined today on my left by Eloise Schreiber, who's a client officer.

09:53

Sorry, can you just said a second Nijmegen, Eloise Schreiber.

10:00

Stage IEP er Thank you

10:12

nothing I'm sure county council

10:19

has more Morning sir.

10:21

Pointer. The manager planning policy Nottinghamshire County Council

10:33

Do we have anybody from Bassett law

10:41

thank you

10:45

that is going to move on to the parish councils

10:51

owning Carol Gilbert from Stoughton, Barstow parish council

11:04

thank you. Good morning. Good morning.

11:09

I'm from Mountain and gate Burton, parish council, Stephen Spence.

11:14

And my colleague is Christine Durning.

11:28

Could you confirm your position and knows you're the chairman?

11:33

I am the chair of the parish council. And Mr. Mrs. Journey is a fellow counselor.

11:43

Thank you.

11:55

Got totally organization. So if we can now turn to the individual interested parties,

12:00

Representative groups of 7000 acres, you just confirm who is here for you today and who will be speaking principally for you. Good morning, sir. This garbage at 7000 acres on teams is Mr. Mark Pryor, you'll be speaking for us. And to my left is another colleague who will introduce himself. Thank you.

12:23

All as Peter already

12:25

much actually part of the filling and parish meeting but I'm representing 7000 acres today.

12:39

To 7000 acres today.

12:45

Okay, thank you.

12:47

And then can we just check is there anybody else who would wish to speak?

12:54

Good morning, Roy Clegg, I'm acting independently,

12:59

but also with the 7000 acre group.

13:04

And you're interested in the application

13:08

just passing on my knowledge in respect of the EMF and fire detection, and your local resident and,

13:18

and Martin.

13:24

In terms of, I've seen various documents that you submitted, so we will come to those at the appropriate time in the agenda. But can I just confirm

13:34

in terms of

13:37

your background or anything what the nature of your background is?

13:43

I'm a former civil servant

13:46

and business owner.

13:50

I used to sit on a British Standard committee, FSH 12 to dealing with our protection, and almost 40 years knowledge and experience of EMF.

14:11

Thank you very much.

14:18

Is there anybody else in the room who may wish to speak?

14:22

Now is anybody else virtually who may wish to speak?

14:27

Not seeing any hands up. Okay. Thank you very much. The fact that you've may not have given me a name, Nii, or an indication of a wish to speak doesn't preclude you from joining into the debate at any

future state. You do wish to speak then just raise your hand or in terms of those virtually Put your hands up and I'll draw you into the debate at the appropriate time.

15:01

I would just reiterate that for the purposes of the recording, it'd be it's extremely beneficial. If each time that you speak throughout the hearing, you could state your name. And if you're representing somebody or an organization who you represent.

15:20

I would also draw attention to the fact that anybody watching on Livestream or at a later date has an opportunity to make any comments upon the matters that are we cover today in writing for deadline three, which is Friday, the first of September 2023.

15:40

So if I move on to the

15:43

purpose of the ASC two, which I covered yesterday, as well, but I will go over today, because we're in a slightly different session.

15:52

Nationally, significant infrastructure projects are considered through an examination process that process is primarily a written process, and information submitted in writing is given similar weight to information provided orally. This however helpful to provide for method to be considered orally.

16:10

When I can then test that evidence challenged and examined. In some more detailed certain aspects of that.

16:19

I will just say that this is not like a public inquiry, where that may be done in an adversarial process with legal representation to cross examining specific witnesses in the examination is conducted as an inquisitorial process, whereas the examining inspector will seek to test the evidence has been put before me, and give parties a reasonable opportunity to put their case to me. For the purposes of this is it I have identified three broad areas that I would like to hear further evidence on. As these are fundamental and important matters to my consideration of this application.

16:58

I have therefore sought to divide the hearing into distinct sections. And we'll deal with each of those. So today's section is going to be dealing with carbon saving.

17:09

It is a controlled agenda, and I will run through the matters in the agenda. And that has previously been circulated. I will say it is I have not an immovable feast. And if there are matters that arise during our

discussions, it may well take us in into certain directions, and I will explore those matters if I feel that they are necessary to do so. The objective of the hearing is to develop my understanding of the issues and consider any further issues arising including any room remaining concerns of IPs, it is not a part of the point where I'm reaching conclusions or findings.

17:54

So we're

17:56

at item seven on this agenda, which is carbon savings.

18:04

Opening this, I would say that I recognize that I've touched on this area at ASU one. And there have also been questions in my first set of written questions. So I acknowledge that we've covered some of this before, and that you may feel that you've given me the information. If I'm asking questions. Again, it may well be that I don't feel that I've got to where I wanted to get to. So I'm just trying to get a little bit more of an expansion.

18:38

I do feel that there needs to be a clear and unequivocal understanding of the benefits of the scheme.

18:46

And that's for me to produce my recommendation to the Secretary of State and for them to make their decision and for the interested parties so that they can fully engage with the proposed development and have a fair opportunity to make informed representations to me.

19:01

So I think it's about by turn to try to disaggregate the technical language and knowledge it's there and not lose documents and just try and get to some of the detail in

19:13

this regard. I've got a number of points that I wish to make, and set out a series of factors that I would wish to understand where they're derived from, and how one influences the other.

19:26

These may well seem simple concepts. So those are the detailed technical knowledge of the process.

19:33

But which would assist others to understand in lay terms, what various terms mean, how they're applied to the skin, and what the likely potential generating capacities and outputs are, and on what assumptions there are based.

19:51

It may be that the applicant can provide a general overview response and then provide a paper that could be submitted into the examination.

20:00

Which explains these matters we can go through or lean on. But it might be that that's helpful document that is then provided to draw together all the things that we talked about later.

20:13

So, the first point to make is the generating station for which consent is sought is for an excessive that the megawatts hence, as an answer scheme.

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First point I want to explore is that the applicant, as has assumed a generating capacity of 531 megawatts

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in response to questions in my first written questions rep to zero 41, the applicant explained some of the yield, and again referred to assumed yields.

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However, this doesn't really address the point, which is probably more fundamental that I'm going to as to where, first of all, the type three one megawatts comes from

21:04

assumed, and I think it's simple, but I just want to get yes response, as it were, is that the total number of panels, which I think no has been identified as yet 100,000 817,110,

21:22

which are Treanor panels, with an output of 650 watts.

21:30

And that gives an installed capacity on the site, when you multiply that I promise of 531.

21:37

So that based on the illustrative layout that submitted with the application

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is that correct?

21:48

Me selling on behalf of the applicant and the SRL. Pastor, Mr. Mike Carter's to explain how the figure 531 megawatts was arrived at

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micarta for the applicant? Yes, so 531 megawatt peak is exactly as you say, designed, the illustrated or the

22:09

layout design is based on 650 watt peak modules. And it's a multiplication of the number of modules by the size of the module at 615, which comes up to 530, you want to try and explain a little bit more in detail of what you said, projects are typically grid constrained or land constrained. And the 531 is really a land constraint. So we've taken into account all of the buffers and

22:38

restrictions. It's an illustrative layout as we would do today for a PV project. Yeah.

22:47

I think we'll get into a little bit of the detail of that, but it's an understanding that the

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chapter on carbon savings is based on the illustrative layout to give us

23:03

a nominal position as it were,

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it may not be adapt the final layout, it may be slightly more or slightly less panels are provided. There are all sorts of caveats around it, but it's giving us a benchmark against which we can measure things.

23:19

I count for the applicant. Yes, that's correct, sir. Yeah.

23:25

Okay, so that gets us to that.

23:28

So my next step, just my perspective, and I have to report to the Secretary of State. So I think there's some matters in which they will wish to actually understand matters. And I acknowledge that the draft in three is draft and not yet a designated document.

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So therefore,

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not necessarily. It's not designated. Let's put it that way. But it is important and relevant, and the Secretary of State has recognized that in recent decisions. So it is a matter that we should have some regard to.

24:09

But the figures that you've given me are direct current figures.

24:15

And then how is that then translated into the alternating current output from the scheme? So what would be the installed output with the power conversions and just a bit of background, and the reason I'm asking this because I feel it's probably important for the Secretary of State to

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understand this in em three, draft I'm sure you're well aware of this, but for the benefit of others, in terms of capacity of a site.

24:47

En 310 41 onwards steps at solar panels generate electricity and direct current. A number of panels feed an external inverter, which is used to convert the electricity to alternating current

25:00

And after inversion of transformer will step up the voltage, but the export to the grid because the inverter is separated from the panel's the total capacity of a solar farm can be measured either in terms of the combined capacity of the installed solar panels measured in DC, which is what we've just gone through. And that provides that bid or in terms of combined capacity of installed inverters measured in AC. For the purposes of determining the capacity thresholds in Section 15 of the act. All forms of generation other than solar are currently assessed on an AC basis, while a practice has developed where solar farms are assessed on their DC capacity, in other words, to determine whether it's an end, and then said, you look at the installed capacity, we've seen that that's an excess of 50 megawatts as an installed capacity. And on your illustrated layer, it's 531. So it's an N zip. And that's how

26:04

the definition of this works at this point in time. From the date of the designation of this n zip, or this NPS. For the purposes of section 15 of the Planning Act, the maximum combined capacity of the installed inverters, measured in alternating current should be used for the purposes of determining shoreline site capacity. So what it's not necessarily something that's particularly relevant at this point in time, and even if this is designated before that, I think the preliminary advice is that you then don't take this into account, but it's still an important relevant background just want to get to the bottom of what the b ac capacity is.

26:46

The AC capacity will be 500.

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Can you just confirm hideouts arrived up? That's really defined by the grid connection capability which is 500 megawatt export. So,

27:02

you would maximize the AC export providing its lower figure than the DC so 531 DC 500 AC

27:12

but is that related to the number of inverters that are provided on site? And is there a definition of the number of inverters that are on site which is within the outline design principles and that they have a maximum capacity and what is that?

27:28

I wouldn't need to check but I would expect it to be 500 as the maximum capacity of the AC of the inverters

27:38

it can be that those are then limited by a power Park controller. So, you have slightly more and it's it just limits but the actual export capability of the inverters or the export capability their solar farm I should say will be 500 megawatts and that will be at 400 kilowatts

28:00

to be 500 megawatts up 400

28:03

KV

28:06

close sorry.

28:08

Right. Okay. Now, you mentioned there that that is sometimes geared towards the

28:16

grid connection. I think I previously asked whether or not there is a grid connection

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limitation

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No, whether or not that will come into play as a restriction on you there must be a grid connection up Cottam substation

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to do how you have an indication of what that grid connection capacity at the substation is.

28:47

And in terms of that,

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I suppose in terms of that we're on and just want to go to and this is it's probably a very small figure is not particularly relevant, but I think it's just understand the issue is will your form be producing in relation to that

29:08

capacity that the substation can take? What would that be in relation to the cumulative effect of all the others and is there a situation where that capacity could be bridged or reached which would then mean that limitations would then need to be put on some of those other generating stations either this one or any of the other ones?

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So

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the

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the national grid have provided a

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connection offer, which is 500 megawatts AC

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thing that's actually a cotton so we will

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at the solar farm if that's thing we may be talking about point of connection

30:00

and points supply, but at the solar farm will export slightly more and then that will be controlled at the national grid connection. So at peak export, we will be

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exporting 500 megawatts at the connection point as allowed by National Grid.

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There are no restrictions on that, on a day to day basis. There have been some written responses made under certain circumstances national grid can enforce curtailment and I think those have been detailed within the written responses.

30:42

So, in terms of the offer that you've got, there are no no restrictions. But are there any capacity restrictions on the substation itself? I don't believe so.

30:58

Mr. Gallow will fill in Simon Guillet. For the applicants as part of the grid connection process, applicants will apply to national grid for a contract and an arrangement which allows them to export up to a specific limit. National Grid will then undertake studies

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and they are the experts on that studies that determine whether at that limit, given what they know about other sites, which are connecting into that substation. And further, what the flows on the national electricity system around that substation are, they will determine whether it is possible for that connection offer to be granted or not. And therefore,

31:46

slightly twee analogy, I'm afraid but I hope it works. If National Grid know that the size of the cuttin substation is a pie, they will cut that pie up into different contracts. And they need to ensure that the sum of the individual contracts does not meet or does not exceed rather the size of the pie. And so in that regard, the different connections can be thought of as independent

32:14

from each other in terms of those effects that you are seeking to understand.

32:24

To an effect at National Grid, making that judgment, they've said, this is the capacity we can take.

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And this is a much we can take from you. So in terms of the solar farm, if there were, as we say, you've got an illustrative layout, and you sought to increase the level of output that would require a further agreement with national grid to increase up.

32:54

Yes, sir. Sorry, Simon, good for the applicant yet. Yes, indeed, it would. However, that's only if that power is to be exported. So, the limits is my colleague, Mr. Carter talks about in terms of the installation of inverters and a potential installation of a power Park module, which limits the instantaneous export

33:23

as long as those are in place to manage that 500 megawatts and not exceed those 500 megawatts, then then no additional contract with grid would be required? No, I was just wondering in future with the nature of the limit, ie there is no limitation being sought or placed upon the DCO in terms of export capacity that provided it was within the outline design parameters that you could then potentially increase the output from the scheme and how would that then be controlled but my understanding is that that is controlled by the contract between yourself and National Grid.

34:09

That's correct. Yeah.

34:34

Fine, move on.

34:37

I think I've got a number of issues to go through.

34:41

Rather than bring parties in at each of the points. I'm going to run through my issues with the applicant get their general response to that. And then I'll open that out to other parties to come in and that may mean that

35:00

There's a lot of information to absorb and come back on. But I think it'd be easier for me in terms of my understanding of how things going. And then I'll give others the opportunity to then ask further questions or come back on those points. So just to confirm that, that's, that's how I'm doing.

35:18

So my next step then is understanding what that means in terms of output of electricity. Here, the applicant refers to me, me to the fact that the

35:31

minimum me yields for the scheme are assumed to be nine to two kilowatt hours per year per kilowatt peak.

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Just wanted to understand what that assumption is based on. Where's that? Where's that derived from? So the ES and the chapter says, you get this, that's then used,

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as we go along to in a minute to multiply up to give you your, your total capacity and the amount of terawatt hours that you can provide. But the basis of the start of that is that you're assuming nine to two kilowatt hours per year per kilowatt power. Can you just explain what that how that nine to two is derived, what it's from and what the basic assumption is?

36:24

Yes, micarta for the applicant. And so it starts with the amount of sunshine, so the irradiance in the area. And that's just the amount of sun falling in, in on on the on the panels.

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And then there.

36:44

Well used simulation software's which you would use to calculate from there, so you have

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sunlight onto the panels, that gives you then a DC output from the panels.

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They're combined together into strings, which then connect into the inverter, which turns dc into AC capacity.

37:07

And then from the inverter, you have a transformer, this case two sort of transformer, and cabling, and then another transformer.

37:19

And each of those steps of transmitting energy, and has losses associated with it.

37:26

And

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in this case, I think it's 80% has been assumed as a reasonable worst case scenario, bringing you to the nine to two kilowatt hours per kilowatt peak installed.

37:44

To initiate bringing you to the 92. From where how do you actually do that?

37:50

Well, in this case, it's using P, I think this will have been done using PVCs software. So the energy will be taken for from databases showing the level of sunlight

38:03

in the area of gay Burton, and then you will we built actually the project and the illustrative layout, put that into the simulation and ran the simulation to come up with the end figures. And that's based on the trainer, trainer 650s 50 watt peak modules. Correct. So that's on that particular module? Absolutely. All your figures are based on the illustrative layout and that particular

38:30

module to generate these figures. That's right. So although the

38:37

the final figure would change with different layouts, it's not likely to be that material. No, I understand that. We're going to go through a number of little tweaks here and discussions about where we're getting to and how much electricity is exported, and therefore get to a position of carbon saving, I just want to understand we get I appreciate that every time there's going to be a caveat that this is an illustrative layout, but there's a total number of panels, that total number of panels may change, the

layout may change, it may either go up, it may go down. You can't guarantee the level of output, you can't guarantee sunshine, you can guarantee whatever those caveats aside, and just understanding what the nature of the calculation is that you've presented to me in the environmental statement and an illustrative

39:34

proxy for what we're looking at as to what the likely generation from the site is. So all the caveats are accepted. Appreciate that appreciate we're not talking about specific finite,

39:48

identifiable and

39:51

points which I can contain with a particular restriction or anything of that nature, but it's just getting an understanding of that.

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So I understand the caveats. And

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I think it might be worth just saying that from a solar resource perspective, it's very predictable in the UK, so

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it's not on to that in a minute. Okay.

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So then you've got this, which is a

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assumed figure. And you multiply yield by the panel's by the 60 year period that you've got, taking kind of the degradation that you talked about the worst case scenarios, and you arrive in at 26.9 terawatt hours of electricity.

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And that's where your

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overall carbon savings are, you start to work back from against a gas fired.

41:01

situation. And that's on an installed capacity. The capacity of the

41:09

inverters

41:12

is based on both the DC and the AC capacity both do impact the amount of generation but yes, that's based on the illustrative design. Yeah, so we've ended up with an illustrative design.

41:26

So is that 26.9? Is that a maximum on the illustrated design? Or a minimum or just a general figure?

41:45

Me standing on behalf of the applicant, probably at this point, I need to double check with Mr. Ben muddy, who is the topic or there, mister money? I'm not sure if you can explain it. I think our working assumption is that it is an illustrative out that rather than maximum or a minimum, but I'll let Mr. Mani confirm.

42:06

But Murray,

42:08

pretty good applicants. That is correct. The the lifetime generation figure that my colleague Mr. Carter has described is an illustrative and Representative figure. It is subject as he's described to a number of variables. But it is best estimate.

42:28

A best estimate Thank you very much.

42:40

For I just wanted to understand how that then sort of breaks down and how we can sort of make sure that I'm understanding where that gets to, to in response to various written questions, that the applicant, you've provided charts and graphs, which show much of this prediction that you've just talked about in terms of weekly, monthly yearly outputs.

43:05

I wasn't quite clear whether or not they were specific to the scheme in terms of the outputs of the illustrative scheme, or whether they were general charts showing the irradiance and levels of potential output in the UK at that particular location at that latitude. So I just wanted to understand what the charge were that you provide me. And given you have an assumed installed capacity, you've got

43:32

illustrative layout, you've got an illustrative panel.

43:39

Then I just wanted to understand if I could be provided with a

43:47

series of figures, which provides me with that monthly yearly output

43:55

on the basis of the illustrated layout, where I can see that that generates and accumulates over the period. So I can see how that accumulation works over the period. And what the final figure is over that period over the 60 years on the basis of the illustrative layout.

44:17

We just have a moment on that yesterday.

44:48

Amy Sterling on behalf of the African I'm sorry, sorry bit of conferring going on. And the working assumption of the people in the room is that the figures provided are schema specific. But we would just need to double

45:00

check that and again, confirming a written submission, notwithstanding the second part of your request, which was outputs on a monthly basis is something that we could accommodate and provide in writing based on the alliterative layout for this scheme. Yeah, I mean, I think that's basically what I'm looking at as a paper, which sort of goes through the questions I've gone through and just sort of set to died. So that for lay people, we understand this is this, this is the scheme. This is how it's designed. This is the nature of the capacity. This is the generation of electricity over that period over monthly, weekly, monthly, yearly periods, it accumulates to x. That's how you get to your final figure. And that way,

45:42

we can rely upon that figure, as the baseline figure against which to assess what the carbon savings would be.

45:50

Me standing on behalf of the African that's not it. So we'll take that as an action point Yeah.

46:23

As part of that information, a number of

46:27

representations have made reference to a 10% 11% efficiency that applies across the UK. Can you just explain to me, again, as a layperson, high that impact into those figures that we've just discussed, what the impact is high that efficiency percentage is taken into account in terms of that, and whether or not that reduces, or is accommodated within the figures that we've just talked about.

47:01

So Simon got it for the applicant.

47:04

So you're right, there are a number of ways of describing the relationship between the capacity and energy generated by a solar park. And we all know that the sun is only up and half the hours of the day. So Mr. Carson mentioned, and you mentioned the nine to two kilowatt hours per year per kilowatt peak number, which is the same as can be described exactly the same way as

47:36

what you mentioned, a between 11 to 10, and 11%, which is a capacity factor. So there are 8760 hours in a year. Sorry, there are 8760 hours in a year. Yeah, if a one kilowatt power generator was generating for all of those hours, it would generate 8760 kilowatt hours per kilowatt per year.

48:08

The number that's

48:10

Sorry, I'll pause while you're writing. That's the

48:14

the number that Mr. Carter described the origins of the 922. And from that satellite data and the PV cyst software application, if you divide 922 by 8760, then you'll arrive at a number which is around 10 and a half percent.

48:40

So it's an alternative way of describing the amount of energy per year that can be expected out of an installed capacity at a location.

48:52

And in that regard, so to come back to your question. That number which you mentioned, as an efficiency number legislator touch on that point in a moment, is within the the analysis that we've just run through to already incorporated within that.

49:17

think it'd be helpful if we were able to describe that as a capacity factor

49:23

rather than as an efficiency.

49:28

Because efficiency is a different physical aspects, which I'd be happy to go into happy also not to go into a different definition.

49:40

Maybe for

49:43

my understanding, it might be helpful if you went into it, but at a high level, certainly so so I get it for the applicant again, the efficiency of the solar panel is measured by the amount of energy

50:00

In bound to that panel, which is sunlight

50:04

and the amount of energy out of that panel,

50:10

which is electrical energy.

50:13

That is the efficiency of the panel. The efficiency of the panel doesn't change.

50:19

It's already been sorted that just like the efficiency of the panel is intrinsic to its design.

50:26

It is the sun that moves around in the sky a

50:31

little bit empty Copernican the way I've said that, I think, you know, what I mean, which changes the capacity factor, but the actual kind of physical engineering based efficiency of solar panels is around 20, low 20s percent

50:49

20.9. Mr. casseras, just informed me that we've stated elsewhere. So hopefully, that's, that's helpful. Thank you.

51:11

Okay, I think I have got a better grasp and understanding of how we got the figures. And I think the production of

51:22

what we've just talked about, and that

51:26

there was tables, and that script div element to talk us through how we get to that. And where we get to the final end of the day, is going to be something useful. Is there a difference between the 26.9 terawatt hours that is identified in the generating capacity, and the output of the electricity that the accumulation of these figures will do assume you've done, applicant has done a business case, they've made a best guess of how much electricity will be generated.

52:06

That will be their economic security is not not for me to get into too much. But they will have identified what they expect the generating capacity will be how much electricity will be prevented.

52:19

What I'm wondering is, is there a difference between what the accumulation of that

52:26

electricity that will be generated

52:29

from these figures?

52:32

And that overall installed capacity that we talked about, in terms of the the output of the 26.9 terawatts? Am I going to get to a different figure at all?

52:55

So I get it for the applicant. If I understood your question correctly, like to I'm working assumption is that the assumptions that we've worked through today do derive that output data, and that is the output of those. And that's where I'm trying to get to to see whether or not there is actually so that overall 2627 terawatts is

53:20

a reliable and robust figure that I can then use. And I understand how we've got to that. And that is based on the output of the illustrative scheme, with those panels in that form without number of panels, and therefore, it's

53:39

not unreasonable to conclude that that is in the order of the electricity that is expected to be generated by the station. So I go for the applicant, yes, we can confirm that.

53:52

Thank you very much.

53:55

Then to get to the actual carbon savings. That seems to be

54:01

there, I said a more simple

54:04

calculation or most straightforward calculation, because then what you're saying is

54:09

this generating station will generate X.

54:15

If this Generating Station didn't generate that, then you will need to generate that electricity from a another source.

54:24

The most likely other source being a gas fired power station. And you've given me the figures of the carbon outputs or carbon effects and impact from a gas fired power station, producing that similar amount of output. And therefore it's simply the difference between those is the savings

54:51

and I don't have any significant issues with using the gas fired power station

55:00

usually as a proxy for the other thing, so I just wanted to understand that where that comes from

55:07

me standing on behalf of the applicant. Yeah, so again, one for Mr. Money to go from, but your understanding is the same as mine.

55:17

Ben Murray Ford's applicant, that is correct the overall lifetime outputs from the scheme that we've just been talking about the 26.9 terawatt hours, that is used, firstly, to estimate some of the embodied emissions from the proposed developments, particularly the PV modules themselves. And it is also used to estimate the counterfactual emissions should this scheme not to go ahead and as you as we've discussed, a combined cycle gas turbine is assumed to be reasonably assumed to be that counterfactual. But for the CCGT, we can apply a typical carbon intensity of 354 grams per kilowatt hour of output. That is an industry standard figure for that type of capacity. And that will give you the alternative emissions for that same amount of electricity. And that net impact can be seen as the overall carbon benefit of this scheme.

56:22

And included within that you've just made no reference to

56:26

the intended carbon

56:30

within the panels, and you've used a different panel to that than a trainee to identify what that is because of the nature of the available information. But you are telling me that realistically, there is no

material difference between those in terms of the embedded carbon in that used in the production of those,

56:58

those panels. And you've also identified in that chapter,

57:05

carbon effects resulting from transportation,

57:09

Bunbury for the applicant. That's correct. At the time that the greenhouse gas assessment was carried out, we used an EPDM environmental product declaration for a different but similar type of PV module. Since that was done, we now have access to an EPD. For a trainer PV module. It's not the exact make model or the scheme but it is from the same manufacturer. And when the embodied carbon data in the two EPDs, one that was used for that assessment, and one for a training module, it turns out that the training module has got whole life impacts similar but slightly lower than that up to use it, it's actually 4% lower on the whole life basis. So we're confident that the embodied carbon figures used as part of the whole life impact or the proposed development due represents a worst case scenario. And as you mentioned,

58:07

other aspects such as the transportation of materials and components to site the construction activity and other aspects have all been taken into account to generate the whole life carbon impact.

58:20

Thank you very much.

58:22

Given what he's just said it would be useful if that were included in that document as well the updated information on the trainer panel.

58:50

Okay, thank you very much. That is

58:53

where I want to get to and sort of takes me to the matters that I wanted to understand. And so I'll open that out so that we can have a

59:05

indication as to whether or not any other parties wish to your

59:13

con contribute so can I come to the council's first of all West Lindy?

59:18

Thank you.

59:21

7000 acres. Do you have anything that you want to comment on that discussion?

59:28

Yeah, sure. Peter already 7000 acres.

59:33

I've covered quite a lot of ground. So

59:36

if I if I try and try and step through some of the some of the points you've raised.

59:43

Clearly, you've been trying to explore a few things

59:46

starting with grid capacity and grid connection.

59:52

He noted that the panels are 650 Watts individually and a

1:00:00

think technically they're also 48 volts is a power that they is the voltage of the say that they they generate out

1:00:13

I think you also noticed that there were a series of

1:00:17

inverters and transformers to step up.

1:00:22

And I guess that's one of the one of the points that we we've been repeatedly making is that it's an unnecessary efficiency to connect inefficiency to connect at high voltage because to bring it back down to the consumer, you've got to take it all the way back down again.

1:00:37

Whereas obviously, such as rooftop you have no no, no need to sort of step it quite so far and faster now.

1:00:50

In terms of the capacity of Cottam substation, I think there's from memory just over 2000 megawatts, you've got an existing coal fired asset that's been demolished and

1:01:06

a CCGT which shared the same connection space.

1:01:15

think one of the key things up ENSET really needs to consider is the strategic nature of such great connections

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and the call for having high power high voltage connection space and clearly generating at 48 volts and 650 Watts is not high power High Voltage demand is only the aggregation of panels in such a space

1:01:46

that is created the need for high voltage high power grid connection.

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But using the

1:01:55

grid connection at cotton, one of the one of the four main days there will sterilize a high voltage high power connection for any other uses. So the the applicant was correct in describing the process with grid grid will we'll consider the queue of who asks pretty much on a first come first serve basis. So there isn't a strategic overview of of grid connections.

1:02:25

And at the moment, I guess there aren't any other competing demands that are coming forward.

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But I guess what we do need to consider what we may need for in the future.

1:02:38

And one of the key challenges that remains with regard to decarbonisation

1:02:45

is how we manage flexibility.

1:02:50

Because and forgive me sir, if you know all this already, but if you you have to match exactly power production with demand.

1:03:03

And that is one of the key issues with with the scheme is we we've been talking about as the next topic,

1:03:13

the volume of power that's produced.

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And the applicant walks about the the sort of nine to two kilowatts per kilowatt hours per kilowatt installed.

1:03:27

Typically, they don't like talking about the fact that actually that is a load factor of around 1010 or 11%.

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Because what that means is that for the headline number that

1:03:39

is described 500 megawatts of 530 megawatts as a as a DC voltage rating.

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Actually, on average, that 10% reduces it around 5055.

1:04:00

And, and this is one of the areas where the applicant has not been transparent with the public

1:04:11

just doing some some rough numbers in the background. And I may be wrong with this, but because I was doing it on the fly,

1:04:19

but 26.9 terawatt hours over the lifetime.

1:04:25

And I concur that the the number is point or eight or thereabouts terawatt hours a year. That would be 55 years.

1:04:36

I thought we were talking about a 40 year scheme. I may be wrong 60.

1:04:41

Okay.

1:04:45

But one of the one of the assessments that's been made recently with regard to long field has been the adequacy of generating capacity and the contribution that the scheme would make

1:04:57

them and I calculations that that would be

1:05:00

Around naught point one four or thereabout percent of the UK generation requirement.

1:05:11

I think the other the other point about this this volume piece

1:05:16

is we talk about different ways of describing electrical output.

1:05:22

One is the the overall capacity, the peak capacity, which is 500 megawatts as we've described. And then we've talked about the overall volume that it will produce over the year, which is said just short of half a terawatt hour.

1:05:38

The crucially, the thing that matters is being able to match power with demand.

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So having the power is is okay if you can use it.

1:05:51

and, crucially, solar output is mismatched with demand. So it produces the peak of its power,

1:06:01

typically, when generate when demand levels are at the lowest.

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And conversely, it produces

1:06:09

the least or nothing when we need it most.

1:06:12

So the

1:06:15

the 10% load factor, or there abouts that's been described, pretty much reaches a peak of around 16% In July, and a trough of around 3% in December.

1:06:28

Now, of course, actually,

1:06:31

in the moment,

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that's an average over the day, but in the moment, you need it at the most at an evening peak at

1:06:43

six or seven o'clock in winter, in the evening, which of course,

1:06:48

these panels will not produce anything for that point.

1:06:55

So there's a the timing is is is important.

1:07:01

And

1:07:04

the fact that at the moment, we're in a position where

1:07:09

even now, even with the intermittent generation that we have on the electricity system, where there can be under and often is in the summer days when there is too much solar and too much wind

1:07:23

for the demand and this is curtailed by creditors basically switched off and not used. Now that what that would do as it would do with this this scheme is it will reduce the net

1:07:37

yield.

1:07:39

So the degree of curtailment would be therefore, something that would impact that 9% alternatives. I saw the 10 or 11% yield and reduce it.

1:07:53

Now in terms of what National Grid believe curtailment could be in the future, they're expecting that to be somewhere between 40 and 60 terawatt hours,

1:08:03

which as you'll note is actually more than the amount per year by the way. And that's more than the output of the scheme over his lifetime.

1:08:11

So curtailment curtailment is a really serious issue. And I think that's something that needs to be borne in mind. That actually,

1:08:19

when we're really weighing up the benefits of using land at the scale,

1:08:26

we really need to be absolutely certain about what we're what we're investing in and what was being what is the genuine benefit to society and the consumer.

1:08:37

I think one other point that I'll just touch on, if I may with regard to

1:08:43

co2 intensity,

1:08:47

and they are not going to dispute the the the equivalent figures for for CCGT. But this is this is where the

1:08:57

there isn't just a direct equivalence of being able to swap energy for energy.

1:09:02

It's about when the energy is available.

1:09:05

So typically the time that we would use

1:09:08

CCGT would be when wind wasn't blowing.

1:09:13

So that may be in the summer, but clearly critically maybe in the winter.

1:09:21

As as I mentioned, the actual key thing that we need to solve for decarbonisation is actually flexibility and dispatchable carbon free power or intraseasonal storage. And by intraseasonal storage, I mean terawatts hours of storage not not not mega watt hours, as is the case with Besse I

1:09:47

think I've probably said it enough there

1:10:02

Thank you very much for those comments. It's very helpful.

1:10:06

Is there anybody else in the room who would have any comments that they wish to make?

1:10:12

Yes. Say who you are. Stephen Spence navigate that and parish council are not an expert. But I've been listening to what's been said. Gentleman, Marathi said cotton power station had a capacity of 2000 megawatts. What's been promised here is 500 megawatts.

1:10:37

So if you look at all the land,

1:10:40

the 7000 acres plus

1:10:43

when it's all running and generating, it will not produce the same power as that one power station did, and they would work 24 hours a day, all year round. This will knock

1:10:57

to me and lots of others. Without the promise to subsidies for solar power, the cost benefit analysis need us to not add up.

1:11:08

Thank you.

1:11:15

Thank you.

1:11:18

No other hands in the room.

1:11:21

Are there any other hands on the virtual room?

1:11:27

Nothing no hands raised wept case, I shall return to the applicant for any final comments that they would wish to make on the submissions.

1:11:37

Service and cycle for the applicants.

1:11:41

I'd like to just place if I made the comments that you've just heard into context with government policy.
And

1:11:52

what we will hit I guess, trying to do which is stop global warming.

1:12:01

In the march 2003,

1:12:04

National Policy Statement draft national policy statements and previously in

1:12:10

the 2020 energy white paper and netzero strategy. And in various other publications government has stated its view that a low cost low carbon future energy system is likely predominantly

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to consist of wind and solar in the UK.

1:12:33

And that is because

1:12:36

the marginal

1:12:38

carbon emissions

1:12:41

meaning the carbon emission

1:12:44

from an extra little bit of power, from a little bit more wind or a little bit more solar, of an existing wind or solar farm it's zero,

1:12:54

which is wonderful.

1:12:58

Because that zero carbon power can be stored

1:13:03

or it can be used.

1:13:06

It doesn't. talking specifically about solar, it doesn't generate overnight, when UK demand is lowest, to lowest overnight. It does generate

1:13:18

in the summer, when UK wind is lowest.

1:13:24

It also generates predictably, which means that future dispatchable

1:13:31

low carbon generation has a chance of having some fuel in the form of hydrogen to burn without emitting carbon.

1:13:46

Any other burning of a fossil fuel

1:13:49

emits carbon

1:13:52

which is a problem because it bonds the world.

1:13:55

And we have a legal obligation to be zero carbon by 2050.

1:14:01

And government has set carbon budgets for

1:14:05

carbon budget four, five and six and a nationally determined contribution to reduce the carbon. So burning fossil fuels doesn't get us along that that legal path.

1:14:16

But the point that I just wanted to kind of close on within this context is we are in an immense transition.

1:14:24

And it's really important as we provide evidence and make statements that we're very clear about whether we're talking about a system now or a system in the future.

1:14:35

Our system now has very little solar curtailment, it also has very little demand for power from electric vehicles.

1:14:47

It has very little demand for power from electric heating systems, electric heat pumps. All of these things will need to happen in the future

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based on current science

1:15:00

Current policy views, current academic studies, all of that needs to happen in order to get us to a position where we will be able to meet our 2050 climate goals and those interim steps and put a halt to global warming.

1:15:20

It's the as I say, just to reiterate that it's incredibly important to context, a statement as a future statement against a future system, which has future levels of demand, potentially has future technologies, as the final points want to close on, versus the current system. Now.

1:15:41

In terms of those future technologies.

1:15:48

If I can be a little bit kind of simplistic, there are there are five kinds of technologies that are that are kind of low real world kind of low carbon, there's nuclear.

1:16:00

There's carbon capture, usage and storage. There's hydrogen, there's wind, and there's solar. Of those five technologies, two of those are being developed and being deployed.

1:16:13

Now, and we're talking about one of those technologies now.

1:16:17

The applicant is not making the case, that gate burst and energy Park on its own will solve the climate crisis, or even that solar on its own will solve the climate crisis is part of a

1:16:33

multi technology mix, which will evolve in time. But the critical point is that those two technologies I mentioned wind and solar are deliverable. Now, we can do them now. We can do storage now. What we can't currently do now is new nuclear.

1:16:55

We know that there's one site being built with a current expected commissioning date of 2028 for the first half of it, but the risks remain. We know there's another site which is ready to go, which might deliver in the mid 2030s.

1:17:13

We know that carbon capture usage and storage is being developed, but it's not yet operational at scale and the same for hydrogen. So if there is an urgent need for decarbonisation, which we believe there isn't government believes there isn't I think, frankly, the world believes there is that we need to do something now.

1:17:35

And that's the that's a kind of another point, which just provides a context around the statements that are made, both for and in opposition to the scheme.

1:17:50

Okay, thank you very much.

1:17:53

Sir, I don't normally go back and forth between points. But given here, we allow you a short response, and then I appreciate that because there's just a patriot ready, yeah. 7000 acres. Now. I am just given the fact that the topic had kind of moved slightly under legal and policy material. And I guess fundamentally, there's a lot of which I think we're probably an agreement of in terms of nobody's trying to

1:18:20

suggest that we're we either want fossil or we want to

1:18:25

decry decarbonisation in any way, shape or form. So I think the objective is, is is absolutely crystal in terms of decarbonisation.

1:18:35

The policy landscape, does talk about wind, and it does talk about solar. I think crucially, the thing that it doesn't talk about is extensive ground mounted solar of this scale.

1:18:49

The policy, and the NPS landscape has called for many years in terms of efficient land use. And it calls for a rooftop solar revolution. Now, we've got what we've got in terms of the landscape. And the

1:19:11

the kind of situation is that Contracts for Difference allow the development of this sort of

1:19:17

proposition at scale, at whatever scale that the planning system will allow.

1:19:24

The rooftop stuff is for whatever reason,

1:19:28

more complex in terms of who pays who owns who benefits. But that's the stumbling block is not technology,

1:19:37

actually,

1:19:39

and agree with the point about an urgent need to decarbonize.

1:19:44

But if there's such an urgent need, why is it that the planning does not require solar on every rooftop

1:19:53

and and that's the bit that I guess none of us in this region can really understand

1:19:59

because

1:20:00

For all the effort that's gone into creating the documentation around any of these asset processes, solar could go on each rooftop, or each new build. And even if you just look at the proportion of new build rooftops that we could deploy on

1:20:20

each year, you could probably build something about the size of a gate burned and deploy every year. And you wouldn't have all the issues with

1:20:29

stepping up to 400,000 volts and stepping it back down again.

1:20:34

This little circus that we're all indulged in now wouldn't involve any of that additional overhead. And it would be deployed, and it will be deployed far more quickly than building something of this scale.

1:20:49

I think the other point I'll just make very briefly with regard to storage.

1:20:55

The gentleman was correct in terms of the five issues, the five different renewable, deployable.

1:21:03

Sorry, future technologies.

1:21:06

Carbon Capture and hydrogen are the two key things that as a, as a world we need to solve. There's a lot riding on it to be able to deliver

1:21:18

to deliver decarbonisation. And as the gentleman says, both of those things are in the infancy.

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But the other part of that equation is storage and its storage of energy between seasons.

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And at the moment, you know,

1:21:35

the applicant will no doubt no doubt talk about best shortly. But best will take an hour or two hours worth of storage. Yeah, we'll talk about that in a moment. Anyway. Yeah. And it's not long term into seasonal storage as we've as we've come from. Yeah.

1:21:52

I'll leave it there. Thank you. Thank you.

1:22:02

Thank you, Steven Spence, Martin and Gabe Burton parish council. I agree with everything that the gentleman over there just said, our main beef. And I think a lot of people here is that as well as power, we will need food. We are now being proposed that we take 1000s of acres out of food production. When, as the gentleman on my right said it could be produced in other areas, especially real tops.

1:22:30

That's all I'd like to say. Thank you. Thank you.

1:22:37

Thank you, Roy Clegg independent.

1:22:40

I think that it's interesting to note, and I'm, I've not come here prepared to discuss that particular topic, specifically. But what I do remember not too long ago, wasn't till the last three prime ministers have, in fact, totally not accepted solar, as a source of energy for the future.

1:23:05

Liz truss said,

1:23:08

We want solar. Yes. And we all want solar belong rooftops. Boris Johnson said in his in the government's energy strategy, didn't mention solar at all.

1:23:25

What we also need to consider, apart from food, the gentleman was just said is simply that

1:23:32

the population of England

1:23:36

is going to significantly increase.

1:23:41

And that needs to be taken into account, especially when we consider not just energy requirements, but also food requirement that I don't want to stray into other markets. We're very specifically talking about the reduction of energy capacity here. There's other opportunities during the examination to talk about other factors. There's the written process, and you can put any comments on those matters in

1:24:09

Can I just draw this point to conclusion by giving the applicant the final right of reply?

1:24:15

In his doting on behalf of the applicant? Yes, sir. I mean, I keep our submissions brief. I think there has been a clear and consistent government policy in favor of grown men to solar PV for many years now. Just one additional point of clarification, sir. I think we've heard in quite a lot of detail, I think from Mr. O'Grady and I don't think it would be useful to understand Mr. Grady's background, technical expertise and that sort of thing. There's been quite a lot of technical information and obviously our technical experts have introduced themselves.

1:24:48

Okay, thank you, Mr. Grady.

1:24:52

Your technical background and so that we can show culture of ready concert and filmmakers

1:25:00

Say chartered electrical engineer by profession

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coming up to 35 years of

1:25:08

engineering and powerplant management

1:25:17

worked in

1:25:19

lots of different generating assets over the years,

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including major asset project,

1:25:28

leadership and management.

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Thank you very much.

1:25:34

Okay, thank you very much. If we can move on into battery storage, I think we've had quite an intense session. I know we

1:25:45

have got a limited session to lunchtime on this, but I think it would be useful to have a short break now. So if we take 15 minutes, so if it's 25 past or just after 25, if we can come back at 22.

1:26:02

hearing is adjourned we will return at 22 Thank you very much.