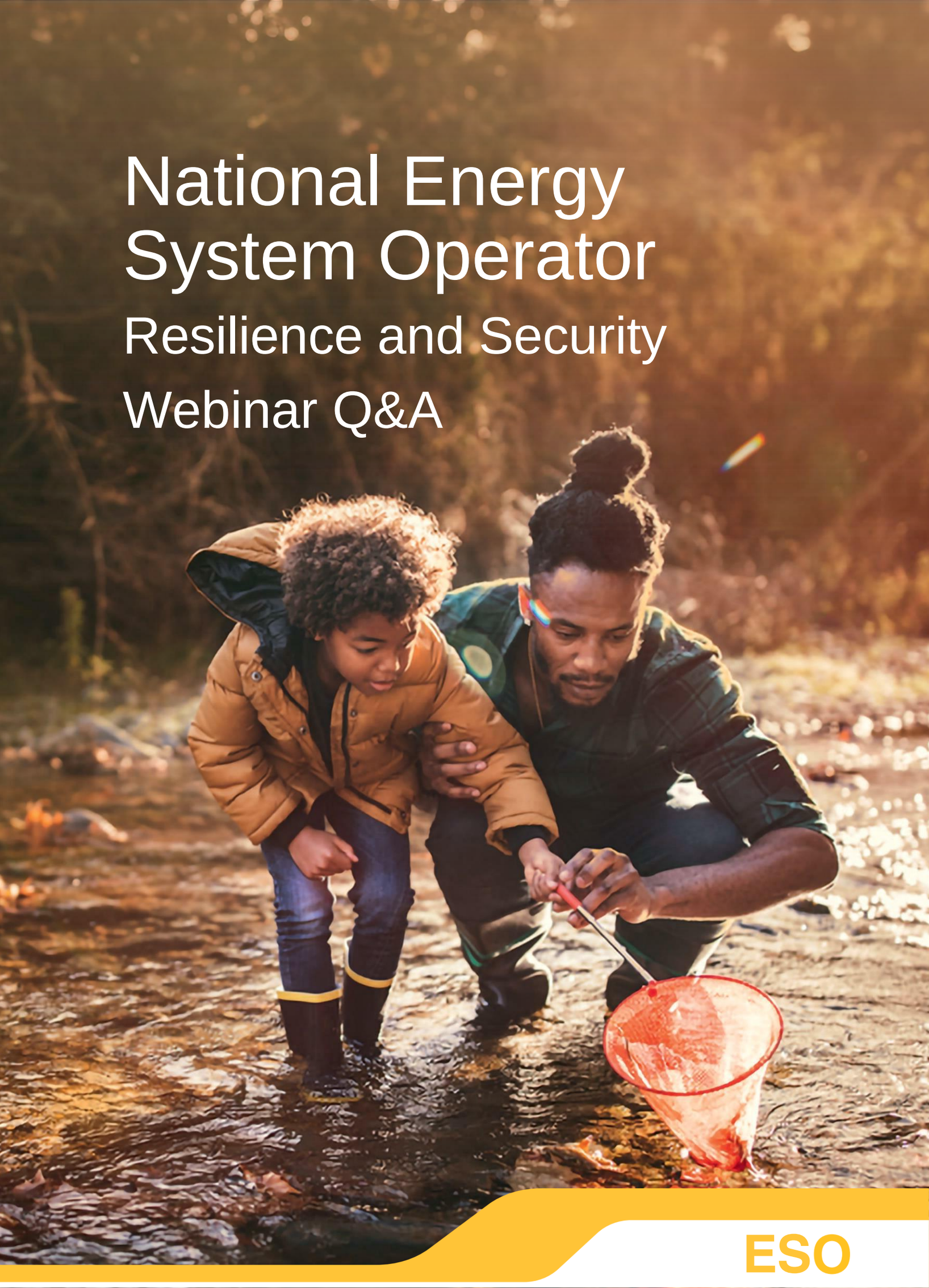
National Energy System Operator

Resilience and Security Webinar Q&A



ESO

Q&A from NESO Webinar:
Resilience and Security 26th Feb 2024

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At the end of February 2024, we ran a webinar focusing on the new responsibilities that NESO will take on from the first day of its existence across Resilience and Security. The webinar explored how NESO is establishing a Directorate of Resilience and Emergency Management that will take a whole system perspective when considering resilience and security for Great Britain. This document contains the questions, with answers, that were asked during the Q&A section of the webinar. If you missed the webinar you can watch it on our website: Becoming the National Energy System Operator (NESO) | ESO (nationalgrideso.com).

How would you feel about the idea of the equivalent of Air Accidents Investigation Branch, but for the electricity grid, to independently investigate major incidents or near misses like the low frequency event of 23 December 2023?
As part of our licence conditions there is a new obligation on us, when directed by the Secretary of State or the authority, to undertake independent investigations into events and emergencies. Events are very much like near misses and emergencies are when significant numbers of consumers are impacted. We are setting up an investigation team within the directorate and are in the process of recruiting a new manager who will build this team. We will look to ringfence that team, bringing in the relevant technical resources from across industry, and we will ensure it is as independent as possible, from Government and the authority but also from NESO. We are currently working with Ofgem to understand what this ringfencing will look like. We won't be as big as the Air Accidents Investigation Branch, but we are looking at the models we can use and what best practice will look like.

How will you publish your methodologies and data for peer review?
A lot of elements are still under discussion with DESNZ as to what we will and won't publish. As you can expect, some of the topics we are dealing with can be sensitive so we will have to tread a careful path as to what we can put in the public domain. Once we can publish information, we will let you know.

What wider engagement is your directorate planning, with who and when?
We have already started doing some engagement through things like the E3C and E3C task groups. We have also been talking directly to the GSO and NEC. Within our directorate we are bringing in a stakeholder team. We recognise that, because of the leadership and coordination role we are playing, we are going to need to do a lot of engagement. This includes people we engage with today but also new stakeholders, from a resilience and security point of view, that we may not have engaged with in the past. Over the next couple of months, we will be working with Ofgem and DESNZ to understand the detail and the scope of the activities. We are hoping that just after Easter we will start talking directly with those people we believe to be involved in the deliverables, and work with them to shape the activities and scope of the reports.

On your security of supply recommendation, who will it apply to? DESNZ or a market participant? Do you expect to require us to buy more longer term if you recommend?
With security of supply recommendations, predominantly they will apply to Government and Ofgem as it might require things like new policy. There are things that we already do, for example, we already help plan the GB capacity market and have a role where we make recommendations on the target capacity. The gas security of supply is a new element that we are working on the terms and requirements for and making those recommendations to Government and Ofgem. However, it is key that we engage with wider industry to understand the broader concerns.

How will you stay independent?
We are working with Ofgem and DESNZ on our external governance processes to make sure that we get this correct and we have the right level of independence from government. Internally, we will have to undertake some investigations of our own processes in the event of emergencies or incidents, and we are working to make sure that we have the right level of governance internally to make sure that those reports have the right level of independence from NESO as well.

What are some of the main threats to the energy system today?
We are looking at a whole range of threats and will engage with industry to see what they think these threats are as well. From our perspective, in the resilience space, we will be looking at climate change, political threats and technological threats. The idea is within our reports there will be a wide range of different threats and vulnerabilities that we will be trying to gather and then assess.
From a cyber point of view, we continue to work closely with Government agencies such as NCSE etc. to understand what the current threat position is and where appropriate, we will put additional mitigating controls in place.

How will NESO engage with and operate with the Gas NEC? Who is in charge?
We already have a strong relationship with the NEC, working with our colleagues across there. We participate in the annual gas exercise each year and we have been engaging with the NEC as we have developed some of the roles over the last 6 months. We will continue to do this, engaging more in some of the details around the different activities. From Day 1, there will be no changes to the emergency procedures or who has the roles and responsibilities, so in a gas emergency, the NEC will continue to undertake their role as they do today.

What will NESO's role be in respect of contributing to the National Security Risk Assessment (NSRA), National Risk Register, etc.?
One of our proposed obligations is to compile an annual risk assessment. We are in the process of starting to engage with Cabinet Office and other departments in Government to understand how the work we do can then be fed into things like the National Risk Security Assessment. One of our starting points for looking at the risks is looking through the National Risk Register and using that as our baseline. We are looking at those risks and considering what the implications of those risks would be on the whole energy system. The idea is that we will then be adding additional energy risks following engagement with industry.

How do you define a) risk and b) resilience?
A risk is a threat or vulnerability to the system, the risk of something happening to the system. We will be trying to understand what the impact of any risks will be. For a particular event, the system has a certain level of resilience. What we want to understand is, for a particular risk, e.g., flooding, where we are today on the energy system against different severities of flooding and whether we are comfortable that this is the right level of resilience for Great Britain. We want to understand the resilience we have today to different magnitudes of events and where we are comfortable. Once we know this, we can start thinking about the level of mitigations we want to put in place.

As we get off fossil fuels our "natural" energy storage is dropping and we are more reliant on real time energy flows. What sorts of issues might this give rise to?
We know the energy system is going to change and it is going to look very different in 10/15 years' time to what it does today. It is important that we start looking further ahead to understand what it is going to look like in the future to make sure we can continue to operate and provide secure supplies for all consumers.

How does the responsibility of NESO overlap or support the cyber security policies and procedures of the individual operating electricity and gas supply companies?
We would be looking to support and not overlap. Each company has their own licence obligations and own relationships with our regulator Ofgem. We would look to continue to facilitate the sharing of best practice when it comes to developing security policies and procedures.

What role will NESO play in ensuring that the right communications systems are in place to support required levels of digitalisation of the energy system?
We are not quite sure currently, but we do have the ESO digitalisation strategy and action plan that is published on the ESO website.

Will NESO have responsibility for a minimum NETS fault level/SCR to ensure generators remain compliant with their designed FRT behaviour?
Currently we have that responsibility, so that will continue under NESO as well. As part of connection arrangements and connection agreements, the minimum obligations would be set by NESO and agreed by the normal governance process.

Future grids will require a lot of data communications. How will you decide which communications systems need to be treated as CNI and which do not?
This is still to be determined as part of the review of the framework for how we classify CNI assets. It is important to bring into the equation the increased reliance on data communications. We can't currently answer the question directly, but it is on our radar.

Do you simulate specific scenarios? E.g., an attack on an interconnector or if the situation in the Middle East escalates significantly.
From a risk and resilience perspective we currently have an innovation project looking at a tool that will effectively start a high impact, low probability event, e.g., a storm, to get an understanding of the potential impacts on society and try to understand things like the number of customers that might be impacted by different sorts of events. We also run a number of different exercises of different scenarios and events happening on the system to test our own response processes.

The first part is looking at the various levels of capability that attackers have and their interest in certain assets, sites and activities. The second part is to then look at some common attack vectors, looking at what would potentially cause an event and what we would then recommend we do to reduce the probability.

We must consider what the wide range of possible scenarios are. We must understand what the future energy system might look like to assess the right kind of scenarios to give us the confidence that we have a secure system and one that is resilient for GB consumers. We need to look ahead far enough and with that breadth to undertake that assessment.

Do you see value in defining roadmaps to support these obligations across wider industry e.g., monitoring devices spec, modelling needs?
Yes, we will be setting up an investigation team which will take a similar role to some investigations that have been carried out previously by Ofgem but also some of the events that have happened. In the recommendations of some of those you might see things commenting on whether the monitoring is fit for purpose with the relevant codes. One of the purposes of the investigations team is to try and find the root causes of the incident and to come up with recommendations for how we can mitigate the impacts or reduce the probability of it happening again in the future.

How does NESO plan to address the system vulnerabilities associated with an energy system that relies solely on electricity in terms of resiliency?

NESO is looking across the whole energy sector and wants to be energy sub-sector neutral. We recognise there will be a growing dependency on electricity, with things like electric vehicles and increased reliance on electricity for heating homes, but we will look to see what the threats and vulnerabilities of different scenarios occurring over time will be. The horizons we look at include season ahead, winter outlook reports etc., all the way out to long-term (2050 and beyond). Relying solely on electricity will be one of the scenarios we will look at, but it will not be the only scenario. We will then look at what the impact will be on system resilience. It is not clear that the future system will rely wholly on electricity. There are multiple different vectors within that system.

What are timelines looking like for publication of the SSEP?

We are currently working closely with government on the scope, approach, and other things around what it is we are going to be delivering for the SSEP and how. From that will come the timeline. We can't give you an answer now, but this is something we will be able to share with you once we have clarity on that commission we get from government.

What impact do you think AI will have in the resilience and security of our energy system?

There are a couple of interesting impacts around AI. There is a strong benefit for being able to utilise AI services in this area, but we also need to be hesitant around the quality of AI services and to make sure, where we do have a mission critical decision being made, additional controls are put in place.

What size of business will the NESO become? How many people do you see NESO recruiting?

The ESO has around 1000 employees and in becoming NESO, will be growing to around 1,800 employees on Day 1. In the new Resilience directorate, we are undertaking a lot of recruitment and expanding our capabilities to cover the new areas in the resilience and security of supply space. Recruitment has begun and will continue over the next 6 months to build our teams up. We now have our management structure in place and are looking to bring in at least 60 new FTEs. However, we are also looking at other things like secondments and building up independent expert panels to review work. We are considering, if investigations aren't happening all the time, how will we build a team for a major investigation when required rather than recruiting all the SMEs to begin with. We are deliberately trying to bring people in from outside the energy sector too which is bringing a lot of benefits already as they help challenge our processes.

When you say "responsible for Security of Supply" do you mean carry on with assessment and modelling, because Government and Ofgem will still be responsible for Security of Supply?

We undertake the assessments to assess risks and potential mitigation measures and we will then use that independent expert advice to make recommendations to Government and Ofgem who will then choose whether to act on it.

What will the future interface with National Grid and Gas look like?

National Grid and National Gas will be key stakeholders in the industry that we will engage with. We have good relationships with these organisations already and we will continue these relationships. The ESO underwent legal separation from National Grid four years ago, so we already have ringfences in place and we have continued the relationships as key stakeholders.

How will NESO deliver an agile/rapid response to the changing net zero pathways, including hydrogen, given the uncertainty and consumer resistance to change?

It will deliver an agile rapid response in light of what is significant uncertainty. Many of us would recognise that as part of our decarbonisation pathway, government set an ambition to fully decarbonise the power

system by 2035, so that does require action that would be required quickly. We must continue to engage with stakeholders and continue to carry out the assessments thinking about the future energy scenarios. NESO will be able to help with that as we have those specific roles: new roles around security of supply and resilience and strategic planning.

How do you assure resilience in a system that relies on consumer behaviour and flexibility services?

This is something that we will be looking at. We will have to think about consumer behaviour and how that impacts the operation and demands on the system. In terms of how to ensure resilience of this, it is a question we can't currently answer but something we will be working on with industry to understand. This is another risk we need to understand and look to see what the implications and mitigations would be. We are working through this with the DFS (demand flexibility service), based on consumer behaviour and undertaking trials with various providers of that service so that we can gain assurance of what is going to be provided when we call on that service, giving confidence to the control room that they will get what they are asking for.

Scotland have recently announced plans for energy storage with a reservoir for storing the energy from Wind and Solar. Will NESO get involved in such projects?

From a security of supply perspective, we have the responsibility to look at the system requirements so will have oversight view of specific projects. However, this is also an area that the strategic planning team at NESO would be involved in.

How do NESO plan to continue building their skills regarding the impact of aggregated, small, behind the meter energy smart appliances on grid resilience?

There are a lot of discussions, from a cyber perspective, around the aggregation of smart meters and smart appliances and what this might look like. Many of us believe this will be a growing trend in the future and there have been some concerns around how that could impact resilience and how those things might be used or have effects on the stability of the electricity state for example. In terms of the actual build of our skills, what we will do is look from the resilience and security point of view to reach out and start engaging with those in this area. We will also look at what capabilities we need internally, whether that's again via permanent recruitments, or just engaging who we need to understand these areas more than we currently do.

Will your remit extend to recommendations on Security of Supply mechanisms e.g., CM parameters/design (not just target capacity), STOR type mechanisms, winter contingency etc.?

We have some examples where we are required to make very specific and explicitly stated mechanisms, for example in the capacity market rules and regulations or in our licence. If, in our independent, expert role, our assessments are showing other things, then we have an opportunity to put that information to Government and Ofgem.

How will governance work where the resilience directorate investigates system events where NESO could be part of that investigation?

We are building an investigation team and we are still working with Ofgem about how the governance of this will work and how we ensure that the team is independent, in particular where they are investigating events to which NESO may have responded, and how they have responded to that event. Although the governance of this is not yet clearly defined, we are clear that there needs to be a level of independence not just from industry and Government but also NESO itself when we are doing those investigations.

We have a working model within ESO at the moment. We have a market monitoring function which is ringfenced from the business and does some investigations of the control room where necessary.

What is your target date for your first annual review?
We have a number of deliverables, some of which are annual, but the target dates are yet to be finalised. Some of them are seasonal, so we are working with Ofgem to find the right timescales for those to be produced. Hopefully these will be set out in the licence consultation.

Design targets for resilience can conflict with targets for efficiency, reliability, safety, environmental sustainability and safety. What is your approach?
This is something that we are still working on. When we are looking at resilience there has been talk about resilience standards and other things coming up. We need to understand the balance with some of the things mentioned - efficiency, reliability, safety, and environmental sustainability. If we were to recommend changes, they could be standards or technical guidance notes, we would have to understand what the other impacts of doing this might be. Currently we are still working on the methodologies of how we are going to do this.

Could you discuss how whole system resilience via NESO translates down into regional level through the proposed RESP?
As well as working with external stakeholders we have a lot of internal stakeholders that we need to work with. Therefore, we will be working closely with them in making sure that any resilience objectives that we deem as necessary are picked up by the RESP.

Could you say more about the annual report on gas security risks and mitigations - e.g., how might it compare with NGT publications, inc. Winter Outlook?
DESNZ recently proposed a methodology to assess medium range (5 - 10 years ahead) gas supply security, that will consider the availability, reliability, and deliverability of gas molecules. NESO will be responsible for conducting this assessment and submitting a report to DESNZ and Ofgem that will also be published. NESO will undertake the assessment to identify risks and recommend remediations to mitigate potential risks. The assessment considers time horizons that are further out than in the Winter Outlook Report, but we will need to consider how this report is developed alongside other strategic planning activities in NESO and we are keen to engage with stakeholders on this assessment.

Are there risk scenarios and high strategic objectives already established or given down to NESO to consider for resilience? If so, will you share them?
We will be considering the scenarios shared in the Government's National Risk Register for assessing the resilience of the energy system. You can find the latest version on the government website here: https://www.gov.uk/government/publications/national-risk-register-2023.

How would NESO interact with project developers e.g., wind farms, solar farms?
NESO will take on new roles such as resilience and emergency management and strategic planning. In these roles, NESO will be responsible for considering the needs of the energy systems such that everyone has access to reliable, clean and affordable energy. It will be for project developers to bring forward and develop specific projects such as new wind and solar.

How do we participate as stakeholders? Do we have to register somewhere?
We are working on our engagement plans and will be reaching out to stakeholders directly and via existing forums in the coming weeks and months.

When you say that on day 1 that the NEC will continue to be in charge in a gas emergency, will this responsibility migrate to NESO over time?
Whether NESO will have a role in whole system coordination during an emergency is still under consideration by DESNZ and work to understand if there is any benefit in including this obligation for NESO will be progressed between DESNZ, National Gas, Ofgem and NESO over 2024/25.

Does your scope extend to assessing the resilience of UK consumers / industry to higher electricity prices?

The scope of our role is limited to assessing the resilience of the energy system but alongside this we will need to ensure that any recommendations we make are in the best interest of the consumer.

In developing NESO, how are you drawing on international experience / international models?

In developing the NESO, we have drawn on international experience and models. While NESO is a unique creation, there are other elements that have been replicated internationally, such as the independence of the organization and the bringing together of multiple energy vectors into one entity. To ensure that we are leveraging best practices and lessons learned, we have engaged with several organisations that have implemented similar models.

ESO