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Planning for the future
STAKEHOLDER ENGAGEMENT WORKSHOPS

Report prepared for NIE Networks

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Northern Ireland Electricity Networks

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Key insights: an executive summary

Background

NIE Networks commissioned Perceptive Insight, an independent market research agency, to undertake an on-going programme of research designed to ascertain the views and perceptions of NIE Networks' customers and stakeholders. This report presents the findings from the latest round of stakeholder engagement workshops, which took place in November 2020.

The main objective of this strand of the research was to qualitatively explore and identify priorities for key stakeholders and to provide feedback on progress since the last round of workshops that took place 12 months ago. To uncover these insights, one large workshop and five focused workshops were held via online video-conferencing. Over 120 stakeholders were invited to attend the workshops. The following tables provides an outline of the workshop topics, the date they took place and the number of stakeholders in attendance:

Workshop	Date	Number of stakeholders
Main: Q&A with Paul Stapleton	12 November 2020	46
Serving vulnerable customers	16 November 2020	12
Needs of business	17 November 2020	11
Connections	19 November 2020	8
The future network	24 November 2020	9
Emergency planning	26 November 2020	9

Main workshop session

Paul Stapleton, Managing Director, NIE Networks delivered a presentation to inform stakeholders of the progress that has been made over the previous 12 months and the areas of focus for NIE Networks looking ahead. Stakeholders were given the opportunity to ask questions to the managing director. The key points that were discussed included:

- Issues relating to the cost of connections;
- Plans for smart metering;
- Plans for carbon offset;
- Managing Distribution Loss Adjustments Factors;
- Managing the increasing demand for electricity and changing customer behaviours;
- Bringing forward investment plans to contribute to rebuilding the economy; and
- The vulnerable customer strategy.

The response to these queries are provided in the main section of this report.

Focused workshop sessions

The focused workshops allowed further discussion of the key issues. A summary of the key issues emerging from each of these sessions is outlined below:

Serving vulnerable customers

- Vulnerability is a fluid and transient concept which requires a flexible definition to include various groups such as those of pensionable age, low-income households, new and existing benefits applicants, those with hidden disabilities and those who may require additional support for a limited time.
- Alternatives to the use of 'vulnerable' as a descriptor should be considered to ensure no one with additional needs feels excluded or deterred for seeking support.
- Further analysis is needed of the possible implications of widespread reliance in NI on pre-payment meters, especially for vulnerable customers who are self-disconnecting either due to fuel poverty or mobility/capacity issues.
- Consideration should be given to the impact of a 'digital divide' on vulnerable customers as the network continues to increasingly incorporate or rely on smart technologies and internet access.
- Promotion of NIE Networks' ethos and values towards vulnerable customers will be an important step in encouraging consumers to voice their needs.
- The appropriate training and empowerment of staff is key to ensuring customers with additional needs are identified and effectively supported.
- There is a stark difference between sign-posting and referring customers to support services, with referral being the preferred approach to ensure take-up by vulnerable customers. In this context, the GDPR should not be given as a reason for inaction.

The needs of business

- Covid-19 has brought considerable challenges for businesses in Northern Ireland. However, the pandemic has also highlighted the resilience of the business community.
- Despite current hardships, it is important to look forward and create space to plan for future years.
- There is concern around the resilience and security of the network in the medium and longer term, particularly given the certain increase in renewables connections in the coming years to 2030. In this context, NIE Networks needs to do more to make their case for investment in the network.
- There is an emphasis on the necessity for transparency with consumers, who need to be aware of why infrastructure needs upgraded, why it is so important to move to net zero and how the transition will have cost implications.
- Part of this future-proofing should include ensuring appropriate skills and materials are available locally to ensure planned works are carried out as scheduled. The need for this type of planning was highlighted by Covid-19's interruption of supply chains.
- The NI approach (as opposed to that of GB or ROI) to network upgrade charges for new connections is acting as a disincentive to investment. This is limiting opportunities for growth and for increased demand on the network, and therefore for lower consumer bills.
- It is important that businesses meet the net zero target by 2050, however, with consideration of the current absence of any climate change legislation in Northern Ireland, there is concern as to how businesses can attain this goal.

- Any viability of an Infrastructure Commission would require a long-term vision and strategy.
- Businesses want to work in a positive partnership with their suppliers, such as NIE Networks, and want their supplier to be supportive, flexible, creative and understand the challenges of their business.

Connections

- Not surprisingly, the Covid-19 pandemic has been a challenge for the construction industry and the sector is currently working to restore its impact on productivity, timescales and costs. In addition, there is continuing concern about the pandemic and the risk that Brexit poses in relation to supply chain management, availability and cost of materials and certifications.
- With their margins being negatively impacted, developers stressed the strong need for smooth processes, so as not to impact their margins further.
- NIE Networks reported that they had made significant changes to the connections process in the past few years in order to simplify and streamline processes for developers and customers.
- Stakeholders confirmed that they have strong working relationships with NIE Networks employees and are confident that when there are issues these are quickly resolved.
- However, stakeholders also commented that lead times had been stretched because of the pandemic and that this was causing some operational difficulties.
- In relation to future builds, there is a stated need for innovative technology to store generated energy. Without this innovation, the appeal and feasibility of energy efficient homes is reduced. Additionally, the costs of building energy efficient homes is not always appreciated or understood by customers.

Future networks

- In the first six months of 2020 Northern Ireland had a reported curtailment of renewable energy which stood at 17%. This was considered to be very high and therefore an issue which needs to be addressed.
- Increasing demand will be placed on the network due to the anticipated adoption of green technology such as electric vehicles and heat pumps.
- In order to manage future demand, there should be a focus on creating the right market conditions, and putting in place regulations and incentive tariffs to encourage good customer behaviours.
- There is a need to change mindsets towards electric heating and there are currently several projects underway looking to promote, engage and educate consumers as to the benefits of moving to greener technologies.
- There is a risk of vulnerable consumers being left behind if they cannot access renewable infrastructure.
- The current revenue asset-based model for costs of connections will not work in a highly variable and decentralised system. There is currently no incentive for the network operator to deliver outcomes such as reducing fuel poverty.
- Regulators must take a more proactive approach to enhance market reform.
- In a bid to both reduce curtailment and aid those who are fuel poor, there are ideas around making use of existing storage infrastructure and upgrading housing stock to be more energy efficient.

Emergency planning and resilience

- There are many critical interdependencies between organisations involved in emergency planning and therefore good communication is vital.
- NIE Networks is a member of a number of emergency planning groups such as the all island cyber security group NCSEAIIE, emergency preparedness groups and the public information and media group. It was suggested that NIE Networks could be directly represented on PEAT, particularly for high wind incidents.
- The Covid-19 pandemic has altered the way in which customers now operate with an increasing reliance on electricity at home. It was suggested that there is an increasing requirement to support customers in more rural areas to minimise the impact of outages on them.
- The pandemic has highlighted the need to ensure that supply chains are resilient.
- The reliability of the network means that consumers in urban areas rarely experience outages and therefore are less likely to have back-up plans in place. There is a need for consumers to be informed and educated on the importance of having readiness plans should something happen.
- Suggested key areas of focus for NIE Networks includes: ensuring the resilience of coastal infrastructure because of climate change and the prediction of coastal flooding; building in security at the design stage and ensuring that cyber hygiene checks are undertaken as part of the procurement process for new equipment; and managing the switch off of the PSTN and the move to IP.
- Suggested areas for future investment included focusing on ensuring that outages are as short as possible/speed of recovery, and continued investment into NIE Networks' Power Checker.

Introduction & background

Research background

NIE Networks commissioned Perceptive Insight, an independent market research agency, to undertake a programme of research designed to ascertain the views and perceptions of NIE Networks' customers and stakeholders.

The research is being overseen by NIE Networks in partnership with the Consumer Council, the Utility Regulator and the Department for the Economy. Representatives from these organisations form the Consumer Engagement Advisory Panel (CEAP). This joint panel provides advice and guidance throughout the research process.

Previously a series of workshops and customer surveys were conducted in 2019. This report presents the findings from the most recent stakeholder engagement phase of the study, which took place in November 2020.

Overview of the research programme

The diagram below provides an overview of the research programme for 2020/21:

PLANNING AND DESIGN

- **Planning meeting**
  - Discuss scope of research
  - Agree timetable and reporting outputs
- **Concise literature review**
  - Compile a short report providing an update on best practice in stakeholder engagement and willingness to pay methodologies

PHASE 1

Identify priorities for key stakeholders and customers

- 1 main engagement workshop with key stakeholders and 5 workshops on focused topics

PHASE 2

Explore the priorities for customers and assess impacts

- Eight focus groups with domestic customers
- 15 depth interviews with non-domestic customers

PHASE 3

- **Interviews with domestic customers**
  - 1,200 face-to-face interviews
- **Interviews with business customers**
  - 500 telephone interviews

The findings presented in this report will be used to facilitate NIE Networks to determine from its stakeholders what their priorities are for future investment programmes and developments.

Approach & attendees

The main objective of this strand of the research was to qualitatively explore and identify priorities for key stakeholders and customers and to provide feedback on progress since the last round of workshops that took place 12 months ago.

Due to Covid-19 restrictions it was not possible to hold the stakeholder engagement workshops in-person as had happened in 2019, rather the workshops were held using video conferencing technology.

Structure of the workshops

Taking into account the optimum way to use video technology, it was decided to host one main workshop with Paul Stapleton, Managing Director of NIE Networks, in attendance, and five follow-up focused workshops with NIE Networks senior managers in attendance.

The purpose of the main workshop was to provide stakeholders with feedback on the progress that NIE Networks has made in the previous twelve months and to highlight the key areas and challenges that the organisation will focus on looking ahead. The forum also allowed stakeholders the opportunity to pose questions to the Managing Director and to give their views on the key challenges.

The purpose of the follow-up focused stakeholder workshops was to allow further opportunity to discuss the key issues in more detail. Fewer stakeholders were in attendance at these workshop which facilitated more in-depth discussion to take place.

The following table details the topic covered in each of the workshops, the date the workshop took place, and the number of stakeholders in attendance.

Workshop	Date	Number of stakeholders
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Recruitment of stakeholders

Perceptive Insight worked in partnership with the NIE Networks' project team to define the delegates to be invited to the workshops. A total of approximately 128[1] stakeholders were invited to participate. The following table summarises those organisations that registered to attend the workshops.

[1] While Perceptive Insight sent out the majority of invitations, NIE Networks sent out a number of additional invitations

Developers/Planners	Government / Policy/Economy	Utilities/Generators/Suppliers
NIHE	Dept for the Economy	Budget Energy NI
Lagan Homes	Utility Regulator	Pheonix Gas
Fraser Homes	The Consumer Council	NI Water
Windsor Developments	Centre for Competitiveness	Go Power Energy
Braidwater Group	Strategic Investment Board	Electric Ireland
Translink	Local District Councils	**Business Customers**
Warrenpoint Harbour Authority	**Domestic customers**	Manufacturing NI
Choice Housing	Advice NI	NI Chamber of Commerce
NI Community Energy	National Energy Action NI	Institute of Directors
CEFNI	Christians Against Poverty	Drumcrow Farm
Educators/ Innovators	NICVA	Heatboss
Ulster University	NOW	Almac Group
Queen's University, Belfast	**Emergency planners**	Huhtamaki
NIEVO	Red Cross	**Environment**
CASE	Cyber Security NI	Northern Ireland Environment Link
The Electric Storage Company	BT	Ulster Wildlife
SGN Natural Gas	Rivers' Agency	RSPB NI

Format of the workshops

NIE Networks' key role on the day was to primarily listen to the views of stakeholders, as well as provide information and clarification to any questions posed, and to provide follow-up to stakeholders who were interested in future engagement.

Perceptive Insight's role within the workshops was to independently facilitate this dialogue, capture the data and follow up with a report highlighting the key findings. Each workshop was recorded and transcribed.

In the sections that follow we identify the key messages from each workshop, based on the following structure:

- Main workshop Q&A with Paul Stapleton;
- Serving vulnerable customers;
- The needs of business;
- Connections;
- The future network; and
- Emergency planning and resilience.

Main workshop: Q&A with Paul Stapleton

An initial workshop was held with all stakeholders, the aim of which was to provide an update on progress since the last workshops were held in November 2019 and to provide opportunity for stakeholders to engage directly with Paul Stapleton, Managing Director of NIE Networks.

During the workshop Paul delivered a presentation to provide feedback on the following:

- How NIE Networks has been performing; and
- NIE Networks' areas of focus.

After each topic an opportunity was provided to stakeholders to ask questions to Paul. The following paragraphs summarise those questions and responses.

Key questions put forward to NIE Networks

Connections

Question: Can you say more on potential policy changes that would impact on connections charges? How would this work?

Response: Paul Stapleton (NIE Networks): In simple terms, when a customer is connected to the network, there is typically two parts to what they are paying for. They are paying for the additional piece of network that joins their house/ factory/ windfarm to the existing network, and any customer joining the network is expected to pay for that. But they also pay for the cost of reinforcing the network, the existing network and voltage levels to provide additional capacity to cater for that connection. It is that second aspect which is the complex area; who should carry that cost? Is it the connecting party or should it be socialised among all customers?

There is no black or white answer to that question, but NI is different in practice than GB or ROI. In NI connecting customers pay a very high proportion of the cost of reinforcing the network to provide additional capacity, whereas in GB or ROI, the connecting customer only pays a very small portion of cost of reinforcing. If the connecting customer does not pay for it, then the balance of that cost goes back into the overall pot which is paid for by the general body of customers.

This poses a societal policy question. If we change policy to be in line with GB, it will reduce the cost for new connections and serve as incentive for investment, but it will result in a marginal increase on cost of electricity for existing customers who would pay for the additional capacity. That is the issue with the policy question at play.

There is a strong economic argument but, to me, I think it is about competitiveness and our current policy is making NI less competitive for new industry, new renewable generation and new

technologies to connect to the network compared to GB and ROI. That is why we believe a change is necessary. Change would require firstly, a policy perspective from the Department for Economy and then the Utility Regulator to agree with NIE Networks the specific measures to put that in place in practice.

Follow-up question: Is that policy change something that is part of the strategic energy framework; is that something that is explicitly being looked at currently, or is it something that would be an outwork of the new strategic framework?

Response: Paul Stapleton (NIE Networks): It has been acknowledged by the Utility Regulator as an issue that needs to be looked at and we will certainly be advocating that it does get a mention.

Question: On the connections issue, is there an opportunity in a post Brexit world to avail of state aid for some of those connections on the business side to offset some of the cost?

Response: Paul Stapleton (NIE Networks): There may well be depending on the outcome of the Brexit negotiations e.g. if there are different rules or contexts around state aid in the UK. The aid has to come from somewhere. In NI the Executive clearly does not have the room at all to provide state aid in this area. Whether there will be a UK level program, I'm not sure but the more normal approach to this across GB and other markets is that it is a cost carried by the electricity sector and it's generally covered over a very long period so it has a marginal impact.

We estimate, for example, if you put £100 million extra on to the electricity bills, to be covered by the electricity consumers, which we recover over a 40 year basis, that would add less than 0.5% to the average bill. For a change in connection policy, you would be talking about much smaller numbers. It might be no more than £10 or £20 million in a given year, so you are talking about fractions of a percent that would impact on the general price of electricity. I think the more sensible way for society to deal with that cost would be through the general electricity bills. But if the UK or indeed the local executive has a way to provide state aid, we will not turn that down.

Response: Ronan McKeown (NIE Networks): If we have a barrier to growing the economy or growing demand of the network, that exacerbates the problem. If we can add that additional cost of connection onto the overall customer base, that will grow the demand as well. Growing the demand will bring network cost down for everyone. The important thing to realise is that it is not always just about cost, if we can grow the demand base there is an opportunity to reduce customer bills as well.

Decarbonisation agenda

Question: For decarbonisation it looks like electric heating is likely to be cheaper than other options, even direct immersion heater heating at times. Are you taking steps to allow Smart control of heating loads to contribute to network stability as more wind is connected?

Response: Paul Stapleton (NIE Networks): Yes, that is one of the key challenges we need to address and is very much part of our thinking. As you mentioned the Minister has set a target of at least 70% of all electricity coming from renewable sources by 2030. In a Northern Ireland context, that will be predominantly wind whether it is onshore or offshore wind.

As we all know the wind blows too much some of the time and not enough at other times, so we need to make sure of how we make use of the surplus energy that is available when the wind is blowing. We have an issue today of curtailment of wind. It will become a bigger issue as we get more wind on the system.

I think the opportunity that you are highlighting is really important because most customers currently have an immersion but what they don't have at the minute is the incentive to use that immersion more or the immersion doesn't know when the wind is blowing. So, the challenge within the electricity system collectively is to join up the wind and the wind turbine to the immersion or indeed other electric heating in our homes. This requires technology solutions, metering solutions and pricing solutions.

There is a project, the Ulster University and Housing Executive called 'Roulette' which is looking at that very issue. How do we enable consumers to get the right behaviours, to understand that when the wind is blowing there are lower costs? How can we put the right pricing and metering solutions in place to enable that? I know Power NI are involved in that project from a pricing and tariff perspective. I think that is a very interesting project in terms of progressing that agenda. It is on a small scale thus far and I think projects of that type, I suppose as a society, we need to invest more into that type of R&D and grow those projects on a larger scale. I think they will develop some very exciting opportunities. I absolutely agree with the principle of what you are proposing there.

Follow-up question and comment: I think you operate our key code meters which have time bands. **I am just wondering could we move low cost time bands to times whenever renewable energy is more available?** For example, in the middle of the night there is going to be wind spilled, in the afternoon there is too much wind and too much solar. So, in terms of quickly incentivising people to switch, could perhaps the Utility Regulator take some of the system charges off the tariffs at those stages to get people to shift. In particular, for their EV's. If not done, people will come home at teatime, plug in their EV's, and add to the peak winter problem.

Response: Paul Stapleton (NIE Networks): I agree, these are all issues that need to be addressed. Certainly, moving the time bands where you have a form of time induced pricing, moving time bands would be helpful. But ultimately, we need to get to a more dynamic model because the wind does not blow every night. We need smart technology, and the question of a better metering solution to support all this becomes relevant in that context. I agree with your point on electric vehicles as well. The network will be severely challenged if everyone comes home, plugs in their electric vehicle at 6pm. We need to get technology that will spread out that charging over the night so that when we get up at 7am the vehicle is charged. We do not necessarily need to know was it charged at 6pm or 3am. These are the models I think we need to be looking at over the next 10 years.

Question: Has NIE Networks had any investigation into carbon offset by investing into peatland or woodland, and management and restructuring of peatlands and woodlands across NI and GB?

Response: Paul Stapleton (NIE Networks): I know in general terms we are very conscious of the potential of carbon offset. Ultimately net zero will require some degree of carbon offset and we are also very conscious of our role and impact on the physical environment in terms of trees, peatland and areas that need to be conserved. We partner with Ulster Wildlife and heritage agencies about

that, so it is very much part of our focus. I do not believe we have done specific research which you are asking about.

Response: Edel Creery (NIE Networks): Those strategic partnerships that we are engaged with, and have been over the years, have yielded positive results. In terms of directly relating to peatlands, I am not aware of anything that we have done there. This is maybe something that would be good to get some views and discussion on in the next focus group in terms of what is possible and what makes sense in terms of going forward.

Managing DLAF

Question: You mentioned that network charges are between 20-25% of the domestic bill. Over the last couple of years distribution losses have been increasing. Year on year since the 18/19 tariff year there have been increases, the latest of about 1.3% above average across day and night. Are NIE doing any research to look at how DLAF (Distribution Loss Adjustment Factors) can be limited or reduced in the future?

Response: Ronan McKeown (NIE Networks): As the networks become more dynamic, that has an impact on the overall kind of losses there are. Some of the things we will be looking at as part of our procurement process is how we ensure we are buying equipment that is providing a whole lifetime cost. We are taking into account the losses of our transformers over a lifetime and procuring them to a specification that tries to reduce the losses as far as practical. The other thing we look at, are there other opportunities to get larger cables or sizing or conductors in a way that we can reduce losses as well. So, it is absolutely something that we are taking into account as we procure our new equipment. The challenge is having some of the older assets that are being used more dynamically, that maybe were not designed in the first instance to be operated in that way. It is over the lifetime of replacing those assets that we will try to make those adjustments to make them more efficient going forward.

Managing increasing demand for electricity

Question: My question is linked to the previous point about increasing demand for electricity. We have got a massive problem, to me it seems to be the elephant in the room that no one wants to talk about, is our problem with constraint curtailment. We have successfully connected a huge amount of wind. I know that an awful lot of that is uncontrolled wind connected at lower voltages and that has helped us reach our 2020 targets. We are currently dumping about 17% of our available wind. That is way beyond anywhere else that I can find information on. In systems where they have started to integrate renewables, what is thought of as a high value for curtailment is 5%, most systems aim for 2-3% but we are currently at 17%. Have you any thoughts on what is the quickest way to address that problem?

Response: Paul Stapleton (NIE Networks): I agree it is a key issue for the industry here and a key challenge. Our level of wind penetration in the system here is the highest in these islands and among Europe, probably the highest in Europe for an isolated electricity system. That is a key source of the issue.

Ultimately, I think there are a few aspects to how we can address this:

- I think building on the type of research and projects - I mentioned the ‘Roulette’ project - in terms of linking demand to wind blowing is one key feature.

- Introducing more storage to the system overall would be another dimension.
- Investing in the network infrastructure, which is a challenge for us to convince the regulator. To work with SONI to make sure we can bring forward projects, which can address those aspects of constraints which are caused by inadequate network infrastructure.
- I suppose the fourth key element will be interconnection. For as long as we are a largely isolated system, with inadequate interconnection with other systems whether it be to ROI or GB or indeed Europe, if we have an isolated system with high dependency on wind generation, we are going to have this issue. Increased interconnection is going to be an important part of this solution. The North/South interconnector is the first and most significant project in the pipeline in that respect.

Over the next few years we need to be progressing on all of those fronts and I think/ hope that the energy strategy process, currently under way, will set the context for how we can make progress in all of those areas. When we have to get to the 70% target by 2030, we can't afford to have curtailments or constraints equivalent to where we currently are. So, we have to make significant progress in all of those fronts over the next decade.

Comment from stakeholder: Using the time bands in existing keycode meters can shift demand to times when more wind energy is available. For example, by re-allocating environmental levy and other costs to other times to make electricity competitive as a heating fuel. It will take time to install dynamic systems, but people are taking out hot water tanks when installing gas. Lots of EVs are being bought.

Those meters are kind of paid for and they can be reprogrammed. The old Economy 7 used to have a number of staggered time bands 'A,B,C,D,E.' You could maybe put a few into for example, between 2 and 3, and 3 and 4. If you are going to add some load, you're not stressing the network. My own suspicion is you might have relatively small take up initially. But you will have the early adopters. We are not generating the signposting and the excitement needed to trigger the transition. People are making decisions and are set in habits that are destructive in terms of final cost of energy transition. That is my concern.

Rebuilding the economy

Question: Linking with the energy strategy and rebuilding the economy, are there items within your current price control which can be brought forward in your work programme to 2021 which would assist with rebuilding the economy agenda? Rather than waiting for a new energy strategy followed by a new price control, are there things now that were maybe programmed for 2022/23 that you think would be helpful to bring forward and help with the rebuild?

Response: Paul Stapleton (NIE Networks): The short answer is yes, there are things within the price control we are looking at to accelerate. Over the last number of years, we have typically invested £100 million per annum in electricity network infrastructure. Because of the impact of Covid-19, that will be reduced to £80 million this year. But next year in terms of catching up and in line with your question in bringing forward investment, next year we are planning for £150 million investment. So, we are looking for a significant step change in the level of investment.

There are some constraints that we have to operate in, that's where policy is relevant, particularly around the planning process. The planning process in NI is not so much about the outcomes because a planning process must allow for different outcomes. Some projects get approved and some do not which is fine. But it is the length of time it takes to get an outcome.

We are well behind comparators in GB or Scotland who have a similar market or indeed ROI. Planning is an area that does curtail and constrain, certainly some of the larger strategic projects at transmission level. That aside, we are working with SONI to progress a pipeline of major transmission investments and looking to progress a pipeline of investments in the distribution network so that we accelerate level of spend within the price control envelope.

We are also working with the Utility Regulator, and credit to the Utility Regulator. Back in 2017, when they were framing the price control, they did build in some flexibility around the area of low carbon technology. They realised at the time that it was not possible to foresee how the next six years would play out in terms of low carbon technology. So, they introduced a reopener mechanism midway through, coming up in the next few months. That will see a significant acceleration in the amount of investment we can make in the network to provide for things like electric vehicles and electric heat pumps and in some technical system areas.

There are lots of areas we can accelerate investment within the price control. We believe there is more that can be done, with the price control, policy changes and there is a way to find flexibility to move forward, for example, in the area of connecting charges.

Comment: Edel Creery (NIE Networks): We have drafted a proposal around a 'Green Recovery' which we have presented to the economy committee. In that we talk about the opportunities for forward investment and how we can support that economic recovery during this difficult time, rather than waiting right through to the next price control.

Vulnerable customer strategy

Question: Touching on the vulnerability strategy that NIE Networks are developing, are there any key outcomes or objectives that have been identified as work in progress? Would this relate to metering or physical arrangements on site?

Response: David Keys (NIE Networks): The key in all of this is defining the term 'vulnerability'. We have our medical customer care register for those who depend on electricity for life saving equipment. In addition, we are looking at customers, with personal circumstances and characteristics, whereby we can provide additional support.

You mentioned 'enhanced engagement' and that is something we are certainly considering. We are in early stages but welcome any feedback or suggestions.

Question: I work in Emergency Response. A lot of our partners over in England would have quite close connections with all the electricity providers and in respect of the critical care customers. Therefore, if their supply were down, they would call on us to go out and support that. For example, providing them with warm blankets, somewhere warm to stay, tea, coffee, food etc, making sure they stay safe during the process of reinstating supply. We do not have anything like that in NI yet. So that is where my question comes from; how quickly do we

reinstate the supply and what sort of support mechanisms are in place at present to protect those people?

Response: Paul Stapleton (NIE Networks): In broad terms, the vast majority of instances where power is out, it is restored very quickly. I think something like over 60% is restored within an hour. The instance of people being without power for a significant amount of time really arises predominantly in a storm situation. In a severe storm, in some instances people can be without power for over 24 hours or over a couple of days. We would certainly prioritise those customers on the critical care register in that context. If there is better practice happening in the GB market then that is something that we definitely would want to consider as we develop our strategy going forward and engage with the regulator on how we can better support vulnerable customers in all instances.

Response: David Keys (NIE Networks): We have the 'medical customer care register' for customers who depend on electricity for life support equipment. We currently have over 10,000 customers on the register and one of the things we are looking to do through the 'vulnerable customers strategy' is to increase the number of customers who can benefit from that service. It is something we hold dear, we put a lot of time and effort into it and it is something that is really important not just to the customers but to ourselves.

On a daily basis, if a customer is on a register and if they report an interruption to the supply, our system will prioritise their call and we will keep in contact with them for the duration of the outage. As Paul mentioned, a high percentage of faults are restored within one hour and certainly over 90% within three hours. But we will keep them up-to-date in terms of restoration time for outage so they can make alternative arrangements if required.

We do not have many situations where customers are off for extended periods, but where that is the case, we will look to make specific arrangements with customers on the register who can be in a difficult situation. If we are in a situation where there is a storm, again we will have a dedicated team set up to manage the customers on the register and they will proactively keep in contact with them and provide support where we can. In an extreme circumstance, we would be looking towards emergency centres. I know we had some interaction with the Red Cross previously but again would be happy to consider anything specific we could put in place as part of our 'vulnerable customer strategy.'

Comment and question: When Paul was talking about supports and measures to move towards a green economic recovery, what really struck me was the importance of considering the social dimensions of that. I was particularly interested in giving NIE Networks a powerful role within the energy sector as a leader in your role in distribution.

Have you considered your social responsibility dimensions in terms of supporting decarbonisation at a micro level? Particularly, have you thought about, in tandem with support for wider renewable energy, giving funding and supports to individuals and communities for the installation of solar PV for example? Micro-generation has multiple and massive co-benefits. I am interested if you have paid attention to that as well. There are a couple of dimensions to consider to that; the social when you think about economic recovery and a just transition, and decarbonisation to make sure no one is left behind.

Answer: Paul Stapleton (NIE Networks): It is a very important area, and when I talked about the need to decarbonise the energy system, we absolutely must bring all customers with us on this journey. We are not going to achieve decarbonisation from the energy sector just talking to itself; we need to be engaging with customers on every level.

In terms of NIE Networks, we are a licensed regulated business. We have a very specific role within the industry which is prescribed by our license and regulated by the Utility Regulator. Currently, our remit would not extend to some of the areas you are talking about relating to providing specific advice or funding to individual homeowners or communities. But we would very much recognise the importance of that needing to be done and it should be done.

If policy or society believe we should have a role to play in that then we are very happy to consider that. It may well be, and something we have advocated for in terms of our input to energy strategies, we believe there should be an independent public body in NI who would carry out that role and provide advice, support and perhaps funding at an individual customer level. Whether it is appropriate for us as a network company to do that, we are happy to have that discussion. That is not the typical model. It is typically done by an agency that would be a public body, totally independent of any commercial players that customers could trust and take advice from.

Comment from stakeholder: NIE Networks has been very supportive on the Girona project which is looking precisely at how disadvantaged groups can participate in the Energy Revolution and not be left behind. The Girona project is looking to bring micro-generation and energy storage to social housing and wider. It plays to this question of just transition. I must say NIE Networks has played a very supportive role in understanding how we make that transition happen. I would tend to agree with Paul that it is not the role of the DSO to support individual customers but certainly for them to facilitate the transition of the system.

Focused workshop: serving vulnerable customers

Who took part?

The focused workshop on serving vulnerable customers was attended by representatives from the following organisations:

- The Consumer Council;
- National Energy Action;
- Advice NI;
- The Commissioner for Older People in Northern Ireland;
- Christians Against Poverty;
- Red Cross;
- NOW;
- The Utility Regulator;
- Budget Energy;
- Phoenix Natural Gas; and
- SGN Natural Gas.

A total of 16 people attended this workshop including four representatives from NIE Networks.

The workshop was opened by Michael Legg from the Consumer Council, who highlighted the role of the CEAP group. He commented that, while often in the past vulnerable people have been treated as static groups, such as those with a disability or of pensionable age, vulnerability is much more fluid and wider than that. He acknowledged the challenge that organisations such as NIE have in defining what is a vulnerable customer.

Ronan McKeown from NIE Networks also welcomed participants to the workshop. He took the opportunity to highlight that NIE Networks has brought forward its workplan to undertake a large piece of work with the aim of developing its vulnerable customer strategy. This is something that they are doing alongside the Utility Regulator's consumer protection programme to ensure that they are all heading in the same direction.

Ronan commented that the energy sector will experience big changes in the next 10 years, which will have a significant impact on all consumers. He stressed the need for NIE Networks to ensure

that this transition is a 'just transition' and that vulnerable customers are considered when building their plans.

Defining vulnerable customers

Participants in the workshop were asked 'who should NIE Networks be thinking about' when they are defining their strategy for vulnerable customers. While a number of specific groups were named, particularly as they may be more vulnerable currently during the Covid-19 pandemic, the discussion tended to be centred on a definition that was flexible, which acknowledges the wide range of issues that contribute to vulnerability, and which takes into account that a customer's need for additional support can be transient. The following paragraphs outline some of the key points that were made during this part of the discussion:

Older people

It was highlighted during the discussions that older people aged over 65 spend more on heating their home. A number of concerns were outlined:

- Many older people are living in single occupancy households and/or in larger homes and therefore, this requires them to spend proportionately more on heating;
- Older people are more likely to have a disability or mobility issues, which means that they may require more heat in their homes;
- Disability or mobility issues can cause problems when accessing pre-payment meters;
- The Covid-19 pandemic means that older people will spend even more time in their homes than in previous winters;
- Not all older people would be regarded as vulnerable and therefore, any measures need to be more tailored and individual.

This winter will be one where a lot of older people are restricted to their homes.

Having a well heated home isn't just a case of comfort, it will have a direct impact on excess deaths or worsening conditions.

Those on or applying for benefits

One of the stakeholders reported that, in their advice-giving role, they would see vulnerable customers who are on ESA and/or PIP and who have underlying conditions. They also raised the issue of people who are applying for Universal Credit, and the increasing number currently affected by this due to furlough schemes being curtailed. They reported that the typical waiting time for benefits to be paid is five weeks. This period of time without money can create a huge amount of vulnerability as it affects the person's ability to pay all their bills.

Flexibility required when defining vulnerable customers

It was acknowledged that an element of flexibility is required when defining vulnerable customers, so that it catches all the potential and different situations in which people find themselves. A number of stakeholders agreed that any definition should recognise that vulnerability can be transient – that there can be a period of time that a person is struggling – and that any approach needs to be tailored to the person.

I would agree that any definition going forward should see that vulnerability is transient and can happen at only one period of time that the person is struggling. It needs to be tailored to the person.

Use of language

One of the stakeholder's commented that some customers may be sensitive to being regarded as 'vulnerable' and therefore, it is important to be cognisant of the language used when defining a vulnerable customer. Rather than call them vulnerable customers it was suggested that they could be defined as customers requiring additional support. A number of stakeholders suggested having a checklist of questions that could be asked as potential indicators of vulnerability without having to use the vulnerable terminology.

Issues of concern to vulnerable customers

Pre-payment meters

Concern was expressed as to the high level of pre-payment meters in Northern Ireland and the impact that this may be having on some vulnerable customers. The key issues that were highlighted included:

- Some of those who are vulnerable may have a limitation which restricts their ability to use a pre-payment meter, resulting in unintentional disconnection. For example, those with early dementia and those with mobility issues;
- Some may think that a pre-payment meter is the only type available to them and may not understand that they can switch to a credit meter;
- Having a pre-payment meter places the burden of responsibility solely on the customer. This means that vulnerable customers, who self-disconnect, may not be identified and therefore supported;
- When a customer self-disconnects/cannot afford their electricity top-up this can have a knock-on effect on other services to their home. For example, those with a gas meter require electricity for it to operate. Therefore, when they disconnect from their electricity supply this means that they also disconnect from their gas, even if their gas meter is in credit;
- One stakeholder questioned whether the high proportion of customers that are on pre-payment meters are excluded from engaging in the market as prosumers. It was suggested that this is an area which needs further scrutiny;
- It was suggested that more information is needed to understand the following:
    - How many people are on pay-as-you go meters;
    - How many vulnerable customers are using this payment method;
    - Who are the customers that are self-disconnecting;
    - What, if anything, can be done to better serve these customers.

We have gone into homes where people may have early onset dementia, the electricity has kicked out, which in turn kicks them out of their gas. There is a whole house solution to be looked at in terms of looking at vulnerability….If a household is sitting without gas and electric for a number of days, who are they? Why have they disconnected?

Internet access

The lack of access to the internet among vulnerable customers was raised as an issue both in relation to communicating with customers and in their ability to use it as a payment method. It was suggested that this needs to be taken into consideration when looking at the practicalities of engaging with customers.

Provision of additional support when accessing services

The issue of hidden disabilities was raised. It was recognised that it can be challenging for some vulnerable customers to engage with services in the first instance, and being passed from one person to another can make this situation even more challenging for them.

It was suggested that support, through staff training or a buddy system for example, could be put in place so that staff are able to more quickly recognise and understand those first engagements and 'draw out' those customers with additional needs. It was also noted that it is important to have a good case recording system which is kept up to date, so that a person does not have to repeatedly tell their story. Also of note was the need to promote the business as one that provides additional support for customers, so that customers are aware of the provision that is available, and which might encourage some vulnerable customers to make contact.

One of the stakeholders made the point that it is important to reflect these standards in the ethos and values of the business and that it should be from the top down. Training of and empowering staff to provide support was viewed as essential, so that they become confident, are able to understand if someone presents as being vulnerable, and can identify the practical things that can be done as a business to support them.

Affordability and the impact on vulnerable customer

The point was made that price increases could trigger vulnerability in relation to affordability and that this should be factored into any pricing strategy. It was stressed that it is vital to understand any impacts that pricing strategies might have. In addition to the impact of increased prices, stakeholders also highlighted the affordability of new technology and infrastructure, and how some customers might be unable to avail of the savings that are open to more affluent customers.

Communicating with vulnerable customers

Training of staff

As highlighted previously, the training of staff was viewed as very important in terms of communicating with customers that might require additional support. One of the aims of this training is to provide staff with the confidence and tools to communicate effectively with customers who may have issues, and to ensure that they have the skills to prevent the escalation of issues which may cause further anxiety to some customers.

I think the key thing is having your staff trained on how to appropriately communicate. It is all about the customer interface, making sure your staff are not worried about what the vulnerability is. The issue is that they have the tools on how to support and communicate.

Promotion of support
As stated previously, stakeholders commented that it is important to promote the approach that the organisation is taking to support vulnerable customers, so that those customers feel more comfortable about making contact.

Promotion was viewed as a requirement to ensure that those eligible are aware of the Medical Care Register.

Good case records
Internal communication can be enhanced by keeping good case records. It was acknowledged that not every member of staff needs access to detailed/confidential information and suggested that having a 'flag' against the case/household would help to alert members of staff to potential issues.

Multi-channel communication
Stakeholders recommended the use of multiple channels of communication, for example, if a vulnerable person cannot or is reluctant to use the telephone, they have the option to deal with issues by email, text etc. They stressed the need to remain flexible to the needs of the individual.

Terminology
It was recognised that the 'vulnerable' terminology may deter or feel patronising to some customers. Therefore alternative terminology should be considered when identifying and working with vulnerable customers.

Signposting vs referrals
One of the stakeholders pointed out that there is a difference between sign-posting and referral, with sign-posting being the provision of information to the customer and referral being the provision of information to the referral organisation for the referral organisation to follow-up on. The comment was made that it is unlikely that a customer will make contact based on sign-posting and therefore, if possible, a referral should be used as it takes the responsibility off the person who is vulnerable and back onto the advice sector.

GDPR and data protection
The point was made on a number of occasion that GDPR should not be used as a reason to do nothing. Provided informed consent has been given by the customer, their details can be shared with other organisations.

Focused workshop: the needs of business

Who took part?

The focused workshop on the needs of business was attended by representatives from the following organisations:

- Manufacturing NI;
- Business directors/owners;
- Institute of Directors;
- NI Chamber of Commerce and Industry;
- The Consumer Council;
- Derry City and Strabane District Council;
- Department for the Economy; and
- SGN Natural Gas.

Four representatives from NIE Networks were also in attendance. A total of 15 people attended this workshop.

An introduction to the workshop was given by Ronan McKeown from NIE Networks. To set the context for the workshop, Stephen Kelly, from Manufacturing NI/Trade NI, was asked to provide an overview of the issues that have been impacting businesses over the past 12 months.

The key findings from the discussion are reported under the following headings:

- The business context;
- Network issues;
- Investment priorities;
- Preparing for a low carbon future; and
- Working relationships with businesses.

The business context

The previous 12 months for business were described as ‘a year like no other’. At the start of 2020 businesses were starting to prepare for the transition of the UK out of the EU. However, any business plans or investments they had for 2020 were ‘ripped up and thrown out the window’ around the middle of March, with the arrival of the Covid-19 pandemic. This was described as an

enormously difficult period for businesses and manufacturers. Some businesses were at the forefront of ensuring the critical flow of food and medicines to the population which highlighted the critical importance of these businesses. However, there were a lot of businesses who found it difficult to continue trading and had to close because it was safer. There were also many businesses who had to adapt to new ways of working to keep their employees and customers safe. The first six months of 2020 demonstrated two things in particular:

- The resilience of the business community and their ability to address problems that no one had seen before; and
- Our over-reliance on international supply chains.

One lesson from Covid-19, it is perhaps that we have all been collectively too reliant and too comfortable on international supply chains. That goes for our own businesses, NIE and the public sector. We need to be looking at resilience in our supply chains as well as opportunities that exist locally and overseas as well.

In the latter half of 2020, with a brief respite from the pandemic for some over the summer period, the Autumn has seen the resurgence of issues relating to both Covid-19 and the exit of the UK from the EU, just as businesses are trying to prepare for some sort of continuity from January.

But we are still standing which has proven the quality of the people we have involved in our business community out there. While there are some who imply the business community is their enemy when it comes to Covid-19, it is quite the opposite. In many ways they are the heroes, keeping production running so we have food on the table and drugs in the cabinet. Keeping things running in terms of ensuring we have a safe, secure and stable power supply. Keeping things running in ensuring people still get wages into their pockets every month. It is quite a feat to say the least, and those people need to be celebrated. 2020 in many respects has been a write off, but in many respects has been very inspiring.

The point was made that even with the current situation, it is important to still look to the future and continue to create space and time to plan for the years ahead.

Network issues

Concern about the impact of renewables on the grid

A number of stakeholders expressed concern about the electricity network in Northern Ireland and whether it will be able to meet the future demand of customers. The point was made that there are already concerns with renewables causing issues around degrading the grid. It was anticipated that the recent announcement by the government of a ban on new fully diesel and petrol cars from 2030 will see an increasing demand on the grid caused by electric vehicles (EV). One stakeholder commented that NIE Networks needs to do more to present their case on why there needs to be investment in the network so that it will continue to be fit for purpose.

People have to understand that the network was built in the 1950's/60's, a lot of it is old, it is reaching end of design life. There are a lot of challenges that NIE face.

Resilience and security of supply

Stakeholders highlighted their concern with the resilience of the network in relation to the reliability and security of supply. It was reported that the Covid-19 pandemic has meant that a lot of planned

work for carbon generators was stood down due to the availability of people (skills) and materials, as both of which were coming from overseas. This means that, over the winter months, some of the big generators will be switched off and going through a period of refurbishment, placing stress on the system operator to ensure that there is enough power. The point was made that there needs to be resilience in terms of having a local supply of materials and people who can do this type of work. This was also linked to the future direction towards a greener supply and the case for building capacity closer to home.

Surely, there has to be a programme of work about building capacity closer to home in terms of materials for stuff that NIE are doing and the capability of people to actually do that work. It is part of a planning piece. Resilience has to be more than just 'do we have enough power, are we cutting enough branches to make sure wires aren't blowing down, do we have enough teams to deal with outages.

Paying to retain unused capacity

One stakeholder highlighted the issue of paying to retain unused capacity. They recognise that they might need the capacity in the future but are unsure when. However, they are reluctant to give up the capacity as they don't know if it will still be available when they eventually will need it.

Capacity constraints

One of the business stakeholders commented that it would be useful to have information on the extent of capacity constraints geographically across Northern Ireland. They were informed that this information is currently on the NIE Networks' website.

Investment priorities

Lack of investment intention

Business representatives commented that they are noticing that investment intentions of their members are very low, and that this stems from businesses beginning to think about what they will have to cut in order to pay back loans taken because of the Covid-19 pandemic.

It all needs paid back and we are finding this is going to have a big impact on their future investment intentions as well.

Cost of upgrading the network affecting investment intention

There are, however, a number of businesses that are growing and who are looking to invest. One business stakeholder commented that their main concern is how they are going to meet future demand and provide the capacity to do so. They are currently looking to commission new machinery and need to ensure they can get adequate power to supply the new machines.

They mentioned that they already have issues with power interruptions. Due to the nature of their business, it can take up to four hours for their machines to start up again and therefore, having a consistent supply is of great importance to them.

However, their main concern, which is holding back the investment in the business, is the cost of increasing the network capacity from 11kV to 33kV. They have received excessive quotes

compared to what their competitors pay in other UK regions, meaning that they will be less competitive and it may impact the investment made by their head office.

The NIE Networks representative responded by acknowledging that the 'he who goes first has to pay the cost' means there is not currently a level playing field across the UK in terms of charging for upgraded connections and that this might be restricting opportunities for growth. In turn, if the opportunities for growth are not created, this means that demand on the network is reduced and will lead to increased consumer bills.

Preparing for a low carbon future

Leadership to attain net zero target by 2050

The UK will host the 26th UN Climate Change Conference of the Parties (COP26) and this was viewed as an opportunity for the UK to be seen as a leader in this area. However, the comment was made that Northern Ireland may not be 'joined up' enough across departments and sectors to take full advantage of this.

One of the stakeholders revealed that there is currently a panel set up to look at the viability of an Infrastructure Commission to provide independent views on the long term infrastructure needs for Northern Ireland. The intention is that this will allow Northern Ireland to capitalise on growth opportunities, and to bring expertise to Northern Ireland so that it can benefit from the green economy. However, it was acknowledged that this would require a long-term vision and strategy that brings the main players to work together to provide leadership.

Another stakeholder observed that, as the Chancellor has announced the mandatory reporting on climate change for large business, it will be important that businesses meet the 2050 net zero target. However, there was concern as to whether there was adequate leadership in Northern Ireland to ensure that the challenge is met, particularly in the absence of climate change legislation.

Aligning policy and business targets

One of the business stakeholders reported that his company has a published target to be 100% on renewables by 2030. He acknowledged that the NIE Networks target of 70% renewable energy by 2030, means that his company will need to find the other 30% from elsewhere, and therefore is looking at the potential for solar power and other options.

Incentives to change

One of the stakeholders commented that there has been no replacement to the Energy Efficiency Loan Fund, which used to lend up to £400,000 for energy efficiency measures, and which was closed by Invest NI in 2018.

Working relationships with businesses

Working in partnership and understanding business needs

A number of stakeholders commented on, and welcomed, the observed change in tone from NIE Networks over the last few years when engaging with businesses and their representatives. They pointed out that businesses want to work in partnership with their suppliers, and with suppliers that understand their business.

They [businesses] want a partner when it comes to their energy needs who understands the challenge of the business and will be as supportive, flexible, and creative as possible to ensure that customer is satisfied. I have noticed that change of approach in the last year and I think it is important it is encouraged. That goes on a number of levels from an individual customer basis to what we are doing today in the approach we are taking coming up to the next price control period.

Communicating with customers about reasons for investment

One of the stakeholders emphasised the need for NIE Networks to bring consumers on the journey with them, so that they are aware of why infrastructure needs to be upgraded, why it is so important to move to net zero, and that this will have cost implications.

Another stakeholder highlighted the need for transparency with customers as to what changes are needed and the why. An example was provided of large energy users in the Republic of Ireland paying less because there was a policy decision taken by the Irish Government, as part of building their economy, to lift some of the network charges and move them to the domestic consumer. The purpose was to encourage investment resulting in getting people back into work to rebuild the Irish economy. It was observed that Northern Ireland is going to be in a similar place in 2021. The view was expressed that if actions are taken with honesty and transparency then people are generally more understanding of why certain decisions are being taken.

Focused workshop: connections

Who took part?

The focused workshop on connections was attended by representatives from the following organisations:

- Construction Employers Federation;
- Housing developers;
- Ulster University;
- Department for the Economy

Four representatives from NIE Networks were also in attendance. A total of 15 people attended this workshop.

The workshop was opened by Ronan McKeown, who informed the stakeholders that a number of significant changes had been made to the connections processes in the past few years, where steps have been taken to simplify and streamline some of the processes for developers and customers. He highlighted the challenges that lie ahead in meeting net zero targets for 2050 and 70% renewable energy by 2030.

As part of the introduction Mark Spence, from the Construction Employers Federation, by way of context, highlighted some of the issues that have been impacting the construction sector over the past 12 months.

The key findings from the discussion are reported under the following headings:

- Setting the context;
- Costs of connections;
- Lead times;
- Working with NIE Networks; and
- Energy efficient homes.

Setting the context

The main priority for businesses in the construction sector is getting through the immediate Covid-19 pandemic. While those in construction have found a way of working, this has had an impact on productivity, timescales and costs. With the transition of the UK from the EU in January, supply

chain management is viewed as one of the biggest risks, along with availability and certification of materials, and the timescales of getting them to site. Although housing has held up well to this point in the year, due possibly to pent up demand, there are concerns as to the impact on the sector if the economy suffers when furlough ends in March. Therefore, at the moment, it is important that the processes that go into construction, including planning, utilities and infrastructure, all work well and are 'very slick/low cost but good value'. This is viewed as being more acutely important now when margins and overall activity are going to be tight.

Costs of connections

As highlighted in the previous paragraphs, those involved in construction are particularly cost sensitive at the moment. One of the issues raised was the rising costs of connections. One stakeholder commented that managing cost increases is probably one of their biggest challenges. The increasing cost of materials associated with Brexit is just one issue, however, there are also 'looming' cost increases due to regulations and statutory challenges, such as NI Water. Any planning and legislative changes will result in different design standards. Each of these factors taken together will mean the cost of building a house will increase a lot, making it more difficult for developers to deliver homes in an affordable way.

One of the stakeholders stressed the need to be kept informed, well in advance of any planned changes to connection costs, so that they can build them into their project costs. This was viewed as being particularly important now when margins are going to be tight for the foreseeable future.

> *You are now talking nearly £1,000 per house per connection. Previously it was a couple of hundred pound cheaper – it just seems to jump and jump…. Maybe there could be a contract where you are not seeing those regular jumps quite as often.*

> *Our concerns relate to cost and anything that can be done to keep costs low, we essentially pass that on to the customer and we can keep homes affordable off the back of it.*

Another issue, which was also raised as part of the business needs workshop, related to the cost of connection to upgrade/reinforce the grid. It was suggested that government could be lobbied to move to a model similar to Great Britain and Republic of Ireland, where the cost is spread across all users as opposed to those wanting the connection having to pay a hefty fee.

Lead times

Stakeholders that engaged with NIE Networks were complimentary of the working relationships that they have established and in particular with the connections team. However, one stakeholder noted that lead times for connections have extended from around three weeks pre-pandemic to six to eight weeks currently. While they acknowledged that the pandemic may be contributing to this increase in lead times, they highlighted that, in the upcoming poor weather of the winter months it is difficult to forecast when the connection might be needed, and if they miss their allocated slot they may have to wait another six to eight weeks. They commented that it is difficult to operate like this.

Working with NIE Networks

As mentioned previously, the stakeholders were very positive about their working relationship with NIE Networks. They singled out names of NIE Networks' employees as being easy to work with. They commented that if they ever have an issue, it is quickly escalated and resolved. Where they encountered issues, this was put down to the approach of individual engineers, rather than something more widespread.

Energy efficient homes

A number of points were made in relation to building more energy efficient homes.

- The first was in relation to the cost of the requirements to take energy efficient measures. The point was made that these costs, which are passed to the customers, are not always appreciated/understood, particularly when making comparisons to the cost of second-hand homes.

- A second issue that was raised related to the adaptation to innovative technology such as PV and the lack of technology available to allow the energy which is generated during daylight to be stored so that it can be used at a time when the customer needs it. The developers discussed with NIE Networks representatives their issues around this and potential ways of working together, along with universities, to solve some of the problems.

That is useful because, say a battery would cost typically between £6,000-£10,000, that is usually prohibitive on most ordinary homeowners. If there was something we could look at in the future so that energy can be diverted as it is generated, only when it is generated from the renewable straight into the heating source for the home. Whether that is modern storage heating or air source heat pump, that is something that would cut out the costs of electricity. In effect, the storage heaters are a form of storage themselves, but it is about trying to match those up.

Focused workshop: future networks

Who took part?

The focused workshop on future connections was attended by representatives from the following organisations:

- Department for the Economy; and
- Derry City and Strabane District Council.
- NIEVO;
- Northern Ireland Housing Executive;
- RSPB;
- The Electric Storage Company;
- Ulster University;

Four representatives from NIE networks were also in attendance. A total of 13 people attended this workshop.

The workshop was opened by Randal Gilbert, head of network strategy at NIE Networks. Randal provided a brief context of the actions being taken by NIE Networks in trying to shape and influence strategy going forward, drawing attention to the UK's ambition for net zero by 2050 and the Climate Change Committee's report in how it can play out for various parts of the UK. Randal affirmed that NIE Networks is looking at a number of decarbonisation pathways for Northern Ireland, to try to understand the impact of hitting emission target reductions and the network costs associated with meeting those ambitions.

Patrick Keatley, lecturer in energy policy and infrastructure at Ulster University, presented an introduction on renewable energy in Northern Ireland. Patrick noted Northern Ireland's strength in having access to among the best renewable resources in Europe in terms of offshore and on shore wind but highlighted that it could be better integrated into the system. He reported that in the first six months of 2020, 17% of Northern Ireland's available wind was dispatched down (dumped). *"This is enough electric to power 100,000 homes for a year. If this figure was bought at domestic rates, it would roughly equivalate to £100 million of electricity dumped."* Patrick stressed that it is a priority to address the issue of eliminating the waste of clean indigenous energy that has already been paid for to be connected.

Patrick also emphasised the need for flexibility in systems. He reasoned that flexibility provides you with the ability to create incentives and allows for empowering customers to play a role in the

electricity market as actors. He commented that this will create a level playing field for demand and customer resources.

The key findings from the workshop discussion are reported below:

Current issues

Participants were asked what issues NIE Networks currently needs to overcome in helping to deliver a network that accommodates future demands.

Issue of curtailment and constraint

Stakeholders highlighted that Northern Ireland has an issue with curtailment and constraint. The following points were made:

- At 17% curtailment, this is much higher than in other regions where the aim is for 2-3% waste;
- To reduce this there is a need for a more dynamic system. Stakeholders were informed that there is potential to use existing energy storage; approximately 80% of houses have a potential energy store already in terms of their domestic hot water tank. Smart systems could help manage this existing storage, for example by using more power at times when there is lots of wind and prices are low;
- There is a natural balance of oversupply, for example, when wind blows at night and there is limited demand. There is also a need to retain a certain amount of conventional generation for stability, albeit offset by carbon capture and storage; and
- It was suggested that the answer may be to manage the demand more effectively; rather than having a target for connecting capacity, there should be a target for consumption.

We have not worked out how to manage the level we have at the moment. Instead of looking at it from the traditional electricity supply view, we should look at it from the consumer side of maximising demand.

Managing increasing demand and Smart Meters

It is anticipated that, with the policy, promotion, and adoption of green technology, such as electric vehicles (EVs) and heat pumps, there will be increasing demand placed on the network for electricity, and that this will need to be managed. A few solutions were mentioned:

- It was suggested that there should be a focus on markets, regulations and incentives;
- Getting market structures right will create the right revenue model, creating more revenue for networks to invest where they see demand growth;
- Incentives, by way of tariffs, could be created for customers who connect and make use of the network at times of low demand (for EVs for example) and therefore rewarded for being benign customers. However, it was felt that for this to work will require smart metering;
- NIE Networks has a number of innovative projects under way. The ‘Flex’ project is a demand piece which is looking at how to incentivise customers to change their demand and help manage the system. Another project, ‘FESS’ (Facilitation of Energy Storage), is looking at what are the blockers in Northern Ireland to widespread deployment of energy storage and solutions around that;

- Under the Electricity Directive, NIE Networks is calling for a rerun of a cost-benefit analysis for smart metering. As well as helping the 'active' customer to manage their energy use, the available data could be used to help the DSO to better manage and design the network more efficiently, by providing information on what end-users are consuming and producing and the times of the day when the network is loaded;
- The discussion saw a recognition of the need to diverge from being a fast follower and not to focus on GB alone. The point was made that Northern Ireland is very different to GB as NI has smaller-scale renewables at lower voltages, and GB has large scale off shore wind farms and access to flexible resources. While there are things which can be learnt from GB, participants argued the need to develop solutions which are bespoke to the unique situation in Northern Ireland; and
- It was noted that the current network was built on the assumption that there would be diversity in its usage i.e. not everyone will use the network at the same time. However, with the energy transition and low carbon technologies coming online, there is an increasing need to revise these assumptions around diversity, as has happened in GB and ROI.

We need more funding for innovation and research, with a more proactive approach.

Impact on customers and attitudes towards electric heating

Stakeholders highlighted that there is a need to ensure that those in social housing, those who are not homeowners and those without capital are not left behind in the move to greener technologies. They queried as to how these 'vulnerable customers' could be pushed to the top of the queue rather than 'what has happened with middle class subsidies historically'.

Additionally, given customers' prior experience of electric heating such as Economy 7, it was acknowledged that there is a need to change mindsets toward electric heating. Stakeholders outlined some of the current projects that are taking place and drew on international comparisons to underline potential solutions:

- There is a partnership programme with Ulster University and the Housing Executive. This project is looking at hybrids of heat pumps so that when there is cheap wind on system, this can be used to charge thermal stores in social housing. The comment was made that the Housing Executive has the benefit of scale with 88,000 homes, making this project potentially an economically viable solution;
- The view was expressed that long-term customer care is fundamental for positive promotion of electric heating. It was suggested that there is a need for engagement with consumers and the creation of an organisation to communicate with householders. The example was provided of Sweden, where a dispute resolution organisation has been set up solely for tenants who have installed heat pumps; and
- One of the stakeholders stressed the need to keep things simple at a local level – 'anything to do with households has to be simple and autonomous… the simple quick one for electricity is solar PV, some form of thermal storage, and then heat pumps.'

NI as a whole across energy, transport, housing and construction, has to spend £1.5 billion a year to become compliant with climate change. We have to have a substantial change in how we do things.

Balance between policy and customer/market led change
Participants debated over the extent to which renewable infrastructure is policy lead or customer/market lead:

- From a social housing perspective, the view was expressed that building regulations will need to be updated to include green technology for future home standards;
- The observation was made that historically, policy is tailored to large centralised systems that need capital investment by investors. However, once renewable markets are underway, if it is cleaner and cheaper, market arrangements will create their own tariffs whether there is regulatory reform or not;
- Again, the point was made that this creates a risk for people who do not have capital and cannot access renewable infrastructure, and therefore there is, arguably, an urgency for policy and regulation;
- One stakeholder highlighted the 'NIRA' project which was looking outside Europe at systems of high penetration of renewables. It highlighted that where regulations and structures, which create the right market conditions, are done in advance or parallel with the deployment of renewables, these had the best outcomes.

Costs for future connections

Participants were asked for their opinion of what the structure for financing future connections should look like and who should pay for any increased costs of connections going forward.

Fair apportionment of costs
The conversation raised the issue of what is a fair apportionment between the costs for a connecting customer and the general customer base. Various participants gave their view on how increased costs could affect their organisation:

- From a university perspective, representatives stated that the less they need to pay on charges, or if they can get revenue back from DSO arrangements, this will drive the economic viability for internal investment;
- Another stakeholder highlighted the issue of performance-based revenue rather than costs of service model. They commented that the current revenue asset-based model will not work in a highly variable and decentralised system; and
- The observation was made that there is currently no incentive for the network operator to deliver outcomes such as reducing fuel poverty.

Utility Regulator and cost of new connections
The current high costs of connections were highlighted as a barrier for domestic electric vehicles and heat pumps, as well as discouraging large EV operators from entering the Northern Irish market.

Concern was highlighted as to whether NI will be left behind if it cannot keep up with policy positions taken in neighbouring regions. Some of the suggestions to combat this issue included:

- Where there has been market reform, regulators have taken a more proactive approach. The view was expressed that the regulator needs to become more proactive, rather than waiting to see what the policy is to get instruction to move forward;
- The customer remains a key part of the discussion and the whole customer base must be considered for any policy changes; and
- Referring to Ofgem who are mandated in relation to climate change, it was argued the same mandate should be applied to electricity in NI. This mandate should include economic recovery and net zero ambitions.

Fuel poor

One stakeholder commented on the large degree of fuel poverty that exists in Northern Ireland and the government intervention to help pay for winter fuel. They highlighted the disconnect between the electricity being curtailed and the fuel poor. Some suggestions and comments included:

- The need for joined-up thinking to consider how the curtailed electricity could be re-directed to fuel poor areas;
- The 'Roulette' initiative was highlighted as a way of managing the excess 'energy cloud.' The idea is to make use of existing storage infrastructure (such as immersion tanks) so that when there is curtailment, there is a system where an operator turns the dial and those households that are prioritised receive that heat for free;
- The comment was made that such a system would need to ensure that what comes from the curtailment should be spread as much as possible across all 140,000 social homes in NI; and
- In tandem with the move to low carbon technologies, there is also the need to ensure that the housing stock is upgraded to be more energy efficient. The Housing Executive commissioned research from BRE to look at the cost of bringing all NI housing stock up to a SAP Band C and B.

Innovation, research and development

Looking forward to NIE Network's RP7 business plan, participants were asked what should NIE Networks be looking at in terms of innovation, what are the challenges and any suggestions as to what areas they should be focusing on. Solutions underlined included:

- Innovative solutions which are network based and controlled by NIE Networks. A key element is getting the tariffs right in order to provide value to customers that will change behaviours and harness flexible consumption;
- Environmental considerations. There is an aim for carbon neutralisation but at the same time there is an issue of habitat species loss. RSPB is actively running a project to develop the restoration of land as peatland which will act as a carbon sink and offset the carbon that is retained in the system; and
- NIE Networks is running four smart technology and network-based solution projects in terms of dynamic line ratings and active network management. The initial project is focusing on industrial commercial customers but will expand to domestic level.

Cybersecurity

Participants were asked their views on what skills are required by NIE Networks for cyber security and what are the main issues relating to this. Several concerns were outlined in terms of cyber threats:

- The view was expressed that the main issue will be the openness of data and information during the implementation of smart meters e.g. who has access and how is it protected from a cyber and GDPR point of view;
- Stakeholders also drew attention to DSO's in GB who took a collective approach when developing their digital network systems.

It is making sure that our systems in terms of how we gather, and process information is as honest as it can be.

Collaboration

Stakeholders were asked how NIE Networks can work collaboratively to develop a provision for a low carbon future. Several suggestions were outlined:

- From a commercial side of things, some stakeholders feel they are not represented enough;
- It was highlighted that Councils are very innovative and do a lot of good work in their respective areas. It was suggested that community links will be very important in terms of accessing the general consumer base; and
- The view was expressed that NIE Networks should become an advocate for clean systems, electrification of heat and making use of Northern Irish resources.

Focused workshop: emergency planning and resilience

Who took part?

The focused workshop on emergency planning and resilience was attended by representatives from the following organisations:

- Belfast City Council;
- BT;
- NI Cyber Security Centre;
- NI Water;
- Rivers Agency;
- Department for the Economy; and
- SGN Natural Gas.

Four representatives from NIE networks were also in attendance. A total of 13 people attended this workshop.

The workshop was opened by Ronan McKeown from NIE Networks, who highlighted that issues such as Covid-19 have forced NIE Networks to rethink what resilience looks like. He also highlighted new challenges on the horizon such as climate change, which will require a more connected network, which in turn, may increase the risks around cyber security.

Claire Carleton from the Belfast City Council and Emergency Preparedness Group commented how the interdependencies between organisations are critical and how she has perceived a positive change in how organisations work together in the last 10 years. She encouraged stakeholders to continue to improve this and welcomed the opportunity to keep talking in workshops such as this.

The key findings from this workshop are presented under the following headings:

- Primary challenges;
- Additional contingency measure; and
- Plans for 2030.

Primary challenges

Participants were asked for their views on what are the primary challenges facing emergency planners currently in relation to network reliability and resilience. Several concerns were raised in terms of loss of electricity:

- The interdependency among key players, such as NI Water, was highlighted. NI Water is one of the biggest users of electricity in NI. With thousands of pumping stations they stressed the need to for good, timely, communication in relation to power outages, as this means they can take some action to mitigate the impact through the use of mobile generators. When there is a loss of power, the tripped switches at pumping stations have to be reset manually. In larger-scale event this can lead to homes being without water for some time.
- Having brown outs can also lead to major issues, particularly for those using sensitive equipment, such as hospitals. Again communication was stressed as vital to enable the management of these types of critical customers.
- The Covid-19 pandemic has led to many people working from home, including those who have an emergency planning role. While many have back-up generators in coordination centres they do not have this equipment at home. This presents a risk should they have incidents to manage in the future.
- It was observed that people and businesses located in cities rarely experience outages. It means that many do not have back up arrangements in place, for example for lifts and automatic doors. This is a particular risk if there is a widespread outage.
- From a cyber perspective, the ripple effect across NI from a cyber-attack would see similar impact as a widespread storm. There is a need to inform and educate people on readiness should something happen.
- It was acknowledged that it is difficult to inform and educate people on the need for readiness when such incidents are rare.

Risk assessment

Participants were asked about risk assessments and if stakeholders work together to assess and prepare for potential risks. Responses included:

- There is a joint NI risk assessment group which focuses on themes; loss of power is one. An assessment of impacts at the time is carried out, followed by what to do. One participant stated that although most businesses have a basic continuity plan, every household and community should be encouraged to be prepared; and
- NI Water plan around consequent management. Consequences of loss of electricity may result in a huge manpower demand operation which is difficult technically and operationally in trying to manage alternative water supply sites.

Relationship between NIE Networks and emergency planners

Participants were asked their opinion on the relationship between NIE Networks and emergency planners. A number of views were included:

- NIE Networks is a regular standing member of the emergency preparedness group, flooding group and the public information and media group;

- NIE Networks is a member of a shared mutual aid protocol between NI Water, BT and Phoenix Gas which enables privatised companies outside of civil contingencies to share resources and help each other when there is a crisis; and
- NIE Networks engages with the all island cyber security group NCSEAIIE, vital in flagging to individuals smaller cyber issues which could heighten.

Areas for improvement

Participants were asked whether there are areas for improvement in relation to interagency communication and liaison. A number of suggestions were mentioned:

- On the cyber front, one participant noted how communicating directly is not always the first action and suggests that during the 'cyber hug' (initial 72 hours of response), perhaps there should be a more open forum around what stakeholders need to do and making sure they are doing the right things and in the right order; and
- One participant suggested NIE Networks should be directly represented in PEAT calls, particularly in the case of high wind events, to best articulate the impact of loss of electricity and provide a comprehensive risk assessment.

The quicker things come on again, the less likely we have to put the full multi-agency coordination in place and deal with the impacts and consequences of people who need humanitarian assistance.

Additional stakeholders

NIE Networks is part of a joint utilities' forum, enabling effective operation when there is a real crisis. To ameliorate NIE Networks' business planning process, participants were asked whether there is anyone else that NIE Networks should be contacting in terms of emergency planning. Several suggestions were mentioned:

- COVID-19 has altered the way we operate and customers reliance on electricity and the internet. There now exists an interdependency and reliance on the home. That means there is a need for more rural support and communication; and
- Supply chain is critical. NIE Networks also needs to look 'backwards' in terms of who is supplying them and those critical dependencies, as well as who NIE Networks provides their services to.

Additional contingency measures

At the start of the pandemic, NIE Networks reported that they had bought a number of additional generators to bolster their contingency equipment. With both Brexit and the pandemic they are continuing to assess if additional equipment needs to be brought into Northern Ireland so that it can be stored 'closer to home'. Participants were asked are there additional types of emergencies NIE should prepare for. A number of responses included:

- One stakeholder highlighted the link between climate change, coastal flooding predictions and NIE Networks' coastal infrastructure. The potential increase in coastal inundation is likely to impact NIE Networks' infrastructure more regularly;

- Another stakeholder stressed the 'security by design' challenge. The plethora of new devices and equipment, and the monitoring that goes with it, means that there is a requirement to build-in the right security at the design stage, along with adding it to routine operational and security monitoring;
- BT's Public Switch Telephone Network (PSTN) will be switched off and is moving to IP by 2025. This will prove a challenge for the majority of utility partners. The BT representative encouraged the other stakeholders to engage with communications partners and IT teams in order to prepare for this;
- Another stakeholder recommended cyber-hygiene checks on devices going into an organisation. Specialist equipment being produced means organisations should carry out a risk assessment at the procurement stage in terms of security, design and architecture; and
- Reference was made to ISO protocols and standards as a way of providing alignment of an organisation to a model.

There has never been a power cut in NI or ROI because of generation. But things are tight this year for various reasons such as power plant maintenance and low wind.

Cyber security

Stakeholders commented that there has been a shift in emphasis from the physical security of organisations to cyber resilience. The potential for future cyber threats raises the question of what are organisations doing in relation to their cyber incident response. Participants were invited to comment on their views and their organisation's response to cyber threats:

- One of the stakeholders who operates in cyber security reported that, in his experience, some organisations have a strong radar of cyber security, with a good incident response. However, many incident response plans assume technology is available; and
- Covid-19 has changed the landscape because so many people are now working from home. The comment was made that it is very difficult to attack a distributed workforce, but the impacts will be large if the distributed workforce is attacked.

Recent cyber targeting of public sector websites elevated the discussion to the issue of cyber security and the interconnectedness of the supply chain. A number of suggestions and observations were outlined:

- There is a misunderstanding that cyber is an IT issue as opposed to an holistic and management issue for the entire firm, requiring firm coordination;
- Cyber should be treated as another risk scenario that organisations need to manage; and
- Cyber threat and ransom-ware are long-term, and this is an issue which is not going away.

Plans for 2030

NIE Networks is looking ahead and currently planning up to 2030. In terms of emergency planning, participants were asked what does NIE Networks need to incorporate into their plans for 2030 and how they think customer demands will change over the next number of years. Stakeholders highlighted a number of issues and made suggestions including:

- NIE Networks should link in to all local development plans in order to anticipate new developments that will impact demand on the network;
- There is an increasing reliance by customers on technology and electricity, and therefore on being connected 24/7. This means the impact of outages is becoming greater as our reliance increases;
- It is likely that climate change will drive changing behaviours with the adoption of smart technology put into places across councils and other service providers.

Network investment

NIE Networks recognises that customer expectations are changing and invited participants to comment whether they believe more needs to be invested to ensure resilience of the network. Some of the suggestions included:

- Ensure outages are as short as possible, as people find it increasingly difficult to be without electricity at home due to their reliance on it for their jobs;
- The focus should not be just about resilience but also about speed of recovery when there is an outage;
- NIE Networks' Power Checker was viewed as being very useful to see the extent of outages;
- People's homes are now effectively small businesses due to the move to working from home. There may be an opportunity to look at tiered provision whereby if a business has remote workers, they pay for a tiered level of service from NIE Networks to ensure faster response should something happen.

Plan for the increased capacity. In terms of what we are consuming, it is much more distributed across the province now and not in the big cities. Also in terms of speed of response, it does not matter what happens in the future, what we want is that if there is a disruption that it is minimal no matter whether a house or business.