Northern Ireland Electricity Networks

NIE NETWORKS' RESPONSE TO DFE ENERGY STRATEGY CONSULTATION

1st July 2021

ENERGY STRATEGY FRAMEWORK

Q1: Do you agree with the overall goal of achieving net zero carbon energy no later than 2050?

- Yes *(Y/N Answer required)*

Q2. Do you agree with the proposed vision of "net zero carbon and affordable energy" for the Energy Strategy?

- Yes *(Y/N Answer required)*

Q3. Do the five principles identified provide clear direction around the approach that we want to take with the Energy Strategy?

- Yes *(Y/N Answer required)*

Q4. Are there any key delivery priorities for the Energy Strategy not captured?

If yes, please outline what you believe should be included.

The consultation has outlined 6 delivery priorities for the Energy Strategy as:

1. Security of supply
2. Costs
3. Intelligence
4. Legislation
5. Regulation
6. Governance

NIE Networks has outlined key priorities aligned with Energy Strategy for Northern Ireland's green recovery that should also be prioritised. Some are linked to the consultation's identified priorities:

- **Regulation *(Linked to Priority 5):* Joining up policy & regulation**
  - Broadening the mandate of the Utility Regulator to consider the need for decarbonisation and economic development. This would provide an opportunity to create a forward-looking regulatory framework that supports innovation and strategic investment.
  - If the regulatory mandate permitted building infrastructure ahead of need, areas of investment in both the electricity grid and the necessary supporting telecommunications, IT and data infrastructure, could be identified and progressed. This would facilitate the accelerated development and uptake of low carbon technologies *(LCTs)* and attract investors, all while delivering the best value for customers.
  - NIE Networks additionally advocates for a review of connection charging policies and regulations to align Northern Ireland with other regions of the UK, making it an attractive and competitive place to invest.
  - Through the joining up of policy setting and regulation, this would help Northern Ireland meet the long-term goal of net zero carbon, all whilst creating jobs and supply-chain opportunities and, in turn, energising cities, towns and villages across Northern Ireland.

- **Accelerating investment in renewables**
  - Northern Ireland is a world leader in terms of renewable electricity generation, with 49.2% of all electricity consumed in Northern Ireland now coming from renewable sources as of December 2020. NIE Networks has invested over £3 billion over the last decade to achieve this, delivering significant economic and environmental benefits for the Northern Ireland economy.
  - NIE Networks is advocating for the Northern Ireland Assembly to formally adopt the Economy Minister's proposed target of at least 70% renewable electricity by 2030.

- Many renewable technologies no longer need substantial subsidies, but they do need development of clear mechanisms to provide some certainty around connections framework, market access and income streams to enable the investments to be bankable.

- **Bringing forward network infrastructure**

- There is a substantial amount of investment still to be undertaken within the current regulatory price control *(RP6)*, which will run until 2024.
- NIE Networks could scale up to deliver an additional £50 million of work annually, supporting a significant local supply chain by working proactively to accelerate investment alongside other industry bodies. This would involve bringing forward key infrastructure projects currently planned for 2024-2026 to 2021-2023. NIE Networks and SONI are developing proposals which require a fast track approach to be adopted by both the Utility Regulator for approval and the Planning Service to ensure projects can be delivered on the ground efficiently.

- **Legislation *(linked to Priority 4)* - Improving the planning process**

- The average planning timeline for major applications in Northern Ireland is 53 weeks, against the Department of Infrastructure's target of 30 weeks.
- NIE Networks advocates for a consistent and fast-tracked planning process implemented for 'green development' projects. This should prioritise the efficient delivery of low carbon and renewable projects with appropriate targets, timeframes and accountabilities.
- The current Northern Ireland planning processes should be revised, ensuring that renewable infrastructure projects and other major grid projects are brought forward quickly, and that NIE Networks can make anticipatory investments in the network now ahead of future need and demand.
- Legislation changes are required to enable key changes in the connection framework to enable the efficient and economic connection of renewable generation, LCTs and new technologies e.g.

  - prioritisation of large strategic projects;

  - planning permission as a pre-requisite for grid connection;

  - legislation does not explicitly allow for application fees; and

  - no scope to optimise connections between distribution and transmission.
- The planning process should facilitate a more strategic approach to the locating of renewable projects and supporting electricity infrastructure. The Transmission System Operator *(TSO)* has consulted recently on options for renewables and grid development. The Developer led approach has been successful to date in allowing generation to be connected to the electricity networks. Further uncoordinated generation deployment could be reduced in this scenario if appropriate data and information was provided regarding network capacity. Demand-led and Generation-led approaches would be most effective if combined. There are benefits to be gained in co-locating demand and generation including better economic development, more efficient use of assets, less constraints and lower system losses. Technology innovation – following successful trials on the transmission network - could be deployed to defer conventional reinforcement or "buy time" as infrastructure projects progress through lengthy planning processes. The final solution may be a combination of some or all of the approaches. Overall the least cost, technically acceptable solution should be considered while taking account of a strategic plan and its deliverability.

- **Accelerating low carbon transport and Electric Vehicle *(EV)* charging infrastructure**

- Decarbonising transport in Northern Ireland would be transformative for not only the environment but for the economy and the creation of jobs.
- In the immediate term, developing an ultra-rapid charging hub infrastructure across Northern Ireland would arguably have the biggest impact in terms of economic stimulus, due to the high investment costs and promotion of the electric vehicle sector. Almost twice as many EVs were sold in 2020 as there were in 2019, which is prompting calls for the need for more public charging infrastructure.
- An initial emphasis on the delivery of electric vehicle charging infrastructure is also required especially to help revitalise areas which have suffered from poor transport infrastructure.
- Whilst welcoming recent developments such as the Interreg funding for a quantity of rapid chargers in Northern Ireland, and by ESB to upgrade the existing EV charging infrastructure, in the absence of other players NIE Networks is prepared to kick start the provision of electric vehicle charging infrastructure and finance the investment, if there is no viable market alternative.

- This would require approval from the Department for Infrastructure and agreement with the Utility Regulator on funding mechanisms.
- To date, all enquiries made to NIE Networks from providers of rapid chargers for EVs have so far been abandoned as a result of the high cost of connection, as well as the reduced market for EV charging infrastructure in Northern Ireland. From our analysis, one such enquiry for which the applicant was quoted c. £178,000 to connect to the network in Northern Ireland would have an equivalent connection cost of c. £63,000 under the GB charging methodology. The applicant did not proceed with the investment.

- **Digitalisation *(Linked to Priority 3)*: Accelerating digitalisation of the energy system**
- Digitalisation of the energy system is central to the journey to net zero carbon, with the data generated key to supporting climate change ambitions. Data helps network operators manage the systems more efficiently and helps customers make more informed choices about their consumption.
- Smart meters have been rolled out successfully across many European countries but are currently not an option for Northern Ireland domestic customers, who have meters with more limited functionality. The introduction of smart meters would provide customers with the energy usage information they need to be more energy efficient and save money.
- NIE Networks advocates for the Department for the Economy to update the business case for implementation of smart metering and to initiate a trial of significant scale for smart meters for customers using low carbon technologies as part of an integrated solution.

- **Supporting energy efficiency through modernisation of building regulations *(Linked to Priority 4)***
- Preventing the loss of energy by supporting energy efficiency through modernisation of building regulations is essential. Through the building of advanced, sustainable and resilient housing infrastructure, we can implement low carbon buildings now, avoiding the need to retrofit properties being built today in the years ahead.
- Significant gains in this area can be made by aligning Northern Ireland's building regulations with those in Great Britain and the Republic of Ireland, where progress towards near-zero carbon buildings has significantly progressed already.

- **Optimising innovation for Northern Ireland**
- It is essential that we build on existing innovation activities in low carbon energy through increased government investment in areas such as large-scale trials of heat pumps, hybrid heating schemes, hydrogen electrolysis, intelligent metering and energy storage.
- Developing the skills and local knowledge around such innovative technologies will encourage the adoption of new technologies amongst consumers and ensure customers save money in the long term.

In addition, we would consider the following areas important to the policy areas in the future energy strategy:

- Priority Area 2 - Costs - protecting vulnerable customers. A full review of the costs of various transition scenarios is required to ensure the optimum policies are developed which minimise costs to customers;
- Priority Area 1 - Security of supply - right mix and balance of indigenous generation – ensure the policies permit a balanced portfolio of renewable generation between intermittent and dispatchable plant;
- Priority Area 6 - Governance – accountability – development of actionable targets and initiatives with ownership and accountability. The University of Exeter Energy Policy Group carried out a 'think-piece' on the current energy governance in Northern Ireland. Recommendations were that energy and climate issues should be drawn into one department (potentially 'The Department for Climate and Energy Transition'), a new independent energy body should be developed which is independent of government but can provide expert support, specific Northern Ireland carbon budgets should be adopted and a duty should be placed on all government departments to consider climate and energy transition as part of policy development ***(https://ore.exeter.ac.uk/repository/handle/10871/125035)***;
- Climate change adaptation and resilience:
    - All pathways to decarbonisation will require electrical connections to homes and businesses.

The degree to which people will rely on a safe and secure supply of electricity will vary, however with increasing demands for electricity for heating and transport together with increased reliance on communications, data and connectivity, it is important to consider the impacts of climate change on networks and their resilience;

- The Committee on Climate Change recently published its report Independent Assessment of UK Climate Risk (June 2021), which states that reducing climate impacts requires both emissions reductions and adaptation; ***https://www.theccc.org.uk/publication/independent-assessment-of-uk-climate-risk/***
- The UK will face significant further changes in climate to 2050 and beyond, even if the world is on a Paris-aligned emissions trajectory;
- The Third UK Climate Change Risk Assessment *(CCRA3)* concludes that progress with adaptation policy and implementation is not keeping up with the rate of increase in climate risk and that the risks to all aspects of life in the UK have increased over the last 5 years;
- The UK will become more dependent on electricity as we reduce our greenhouse gas emissions to Net Zero and it becomes our dominant energy source. Electricity provides about 15 - 20% of our energy today. By 2050 it could account for around 65%, as we transition to the use of electricity for heat, transport and across industry, as well as light, communications and delivery of other critical services such as water. People and the economy will be increasingly exposed and vulnerable to electricity system failures;
- Risks from climate-related hazards will become more common and more damaging as our dependence on electricity grows and the variability of our weather increases;
- The Committee on Climate Change recommends that the Government works with the regulator and the industry to review the approach to electricity system design and risk assessment in the context of the more central role of electricity in the UK's future energy system. NIE Networks would advocate for the same approach be taken for Northern Ireland particularly given the nature of the Northern Ireland network being substantially rural overhead line with circa 3 times the length of overhead line per connected customer as the GB average.

Q5. Do our proposed indicators adequately allow us to measure success at achieving the proposed Energy Strategy outcome? If you selected 'no' to any, please advise on what alternative metrics should be considered.

a) Carbon emissions from energy-related sectors – Yes

b) Jobs and turnover in the low carbon and renewable energy economy – No, consider additional measures of:

- **Ranges of skills developed or enhanced**
  An indicator of success in the transition is the change in the skills base in Northern Ireland. Existing skills will be enhanced through new technologies being adopted and new training courses will be required. In addition, the transition will bring a range of new skills into the sector.
- **Further Education course and apprenticeship opportunities created / enrolled**
  A direct indicator of the emerging workforce skills to meet future requirements will be to monitor Further Education courses and apprenticeship programmes across the sectors to determine any potential shortfalls or gaps.

c) Domestic energy costs relative to household income – No, consider additional:

- **Metrics on energy efficiency improvements adopted**
  A direct indicator of energy efficiency measures adopted and associated spend will help determine how this important first step in the decarbonisation strategy is impacting on energy usage reductions.
- **Energy consumption – for all primary energy sources**
  In addition to domestic energy costs relative to income, a direct measure of all primary energy used should be monitored as a potential measure of vulnerability. This will help determine the effectiveness of any energy efficiency measures adopted in reducing overall consumption.

d) Business energy purchases relative to business turnover – No, consider also:

- **Energy consumption – for all primary energy source**s
  As with domestic, it would be a useful to measure consumption from all primary energy sources as well as purchases and costs.

e) Households in fuel poverty – Yes

- NIE Networks believes that it would be important for the Department for the Economy to consider fuel poverty along with appropriate bodies such as Northern Ireland Fuel Poverty Coalition and consumer representative bodies such as National Energy Action

f) Relative electricity & gas prices - No

- **There is currently a disparity between the pricing methodology of electricity and gas to the customer:**

o Electricity suppliers in Northern Ireland include costs for ROCS *(Renewable Obligation Certificates / Northern Ireland Renewables Obligation)* in their retail bills whereas gas suppliers do not;

o Both electricity and gas suppliers are responsible for charging a climate change levy to business customers. The levy rate in the electricity bill is circa double that included in gas bill; and

o The cost of connecting to the gas network is socialised and therefore not chargeable to the connecting customer. In the case of electricity, the costs of connection is 100% chargeable to the connecting customer up to one voltage level up from point of connection. This presents an imbalance and potentially an inappropriate price signal for customers in terms of the long-term decarbonisation options for customers as they make investment choices as to future energy needs.

In order for this to be meaningful, the balance needs redressed. In terms of future energy strategy, consideration is required on future levies or charges ensuring that they are made on a fair and equitable basis.

SCENARIOS TO NET ZERO CARBON ENERGY

Q6. Do you think there are significantly different illustrative scenarios which should be developed?

If so, please provide further information.

Yes

The Consultation has modelled 4 scenarios through their Energy Transition Model *(ETM)*

1. Business As Usual
2. High electrification
3. High gasification
4. Diverse

In terms of the modelling capability and scope of the Energy Transition model, the scenarios modelled provide an assessment of the final energy demands and an indication of the reductions possible under each of the scenarios with the High Electrification and High Gas scenarios modelled being net zero complaint. NIE Networks / SONI presented a joint working group *(JWG)* report entitled 'Insight Paper: Energy Scenarios to Inform Developing Energy Strategy in Northern Ireland - A joint paper by NIE Networks and SONI describing scenario processes and insights gained in order to inform the DfE energy strategy process' dated 10 December 2020. This work modelled high electrification inputs for three different scenarios – two of which *(Achieving Climate Change and Accelerated Ambition)* would concur with that similar outcome i.e. net zero compliant, however the modelling in the ETM is different to the JWG models.

The Consultation does not present the associated costs of the scenarios and does not appear to be possible in the ETM. There will be a need to model different scenarios for the renewable electricity sources i.e. large-scale centralised decarbonisation deployment vs. decentralised decarbonisation deployment through an increase in small scale generation *(SSG)* / microgeneration with options to blend approaches. These different scenarios will have implications in terms of network costs *(as they will drive different network reinforcement needs)* and also have very different overall cost impacts when considering incentives. This is a critical piece of work that needs to be undertaken with urgency in order to make the analysis of the scenarios more meaningful. We would refer DfE to the modelling work presented by NIE Networks and SONI in the JWG report, where the impact on the transmission and distribution network in terms of investment costs are assessed for the scenarios considered.

The DfE scenarios don't have offshore wind included by 2030 however with the right policy decisions and

progress on issues such as market development and inclusion in Crown Estate leasing rounds, offshore wind inclusion by 2035 could be credible. The levels of ambition for Hydrogen included are also generally more optimistic than the Committee on Climate Change *(CCC)* scenarios. A scenario for 2035 considering the hydrogen ambitions and timescales closer to the CCC scenarios and inclusion of offshore wind by 2035 might be useful to consider to indicate what might be achievable enroute to 2040.

PLACING YOU AT THE HEART OF OUR ENERGY FUTURE

Q7: Do you agree with the four consumer population groups we have identified? Please advise on key considerations within each.

a) Domestic vulnerable consumers

b) Other domestic consumers

c) Small businesses

d) Larger businesses

Yes for *(a)* to *(d)*.

- There appears to be a wide variation of the definition of 'vulnerable' amongst different groups and organisations, especially for organisations in the service sector. NIE Networks has launched its 'Vulnerable customer strategy 2021-2024' ***(https://www.nienetworks.co.uk/documents/customer-leaflets/vulnerable-customer-final.aspx)*** where it recognises different customers' needs:
    - o are critically dependent on electrically powered equipment *(including life-protecting devices, technologies to support independent living and medical equipment)*, or
    - o are identified as needing extra support due to their personal characteristics or circumstances.

For the purposes of the energy strategy and ensuring a just transition where vulnerable are protected, it is important that the definition of vulnerable is understood and accepted.

- Classification of customer groups was considered in the DfE's Consumer Working Group. The categories make it easy for people to identify which category they belong to however, NIE Networks will not be able to provide electricity data split into these defined customer groups. NIE Networks do not tag customers as vulnerable, nor do we have information on the number of employees for business customers.
- If a register of Northern Ireland vulnerable consumers is to be established, there are fundamental issues to be addressed – for example, who is responsible for confirming the vulnerable status and who keeps and maintains the register of vulnerable consumers? This register will be required to track people as they change residence and/or status to non-vulnerable. DfE should take note of work progressing in this area by the Utility Regulator under its Consumer Protection programme.
- It is vital that vulnerable customers are not left behind and that the measures to enable and protect these customers are effective. Extensive consultation will be required with representative bodies.

In addition;

- NIE Networks, working in conjunction with the Energy Networks Association *(ENA)* Open Networks Project Working Group, has categorised customers into four potential groupings as follows:

o **Active customers:**

1. **System service providers**

    Sophisticated and highly enabled customers who would opt to sell system support services to the Transmission System Operator *(TSO)* or NIE Networks as the Distribution System Operator *(DSO)* who, acting in their roles as operators of the electricity network, require such services to make sure the network remains stable and safe. These customers have generally invested in specialist equipment that enables them to participate in the energy market and provide support services, or they are demand customers who are more aware of the energy market and can flex their electricity usage as part of their businesses – through

demand side management, for example. This customer category includes larger individual customers and also aggregators providing services through the management of a portfolio of smaller customers. The TSO or NIE Networks would agree term contracts on a bilateral basis for the services they require.

2. **Active participants**

   These customers are also sophisticated and highly enabled, and have invested in distributed energy resources *(DER)*, demand side management or low carbon technologies *(LCTs)*. This customer category will include customers actively participating in the energy market to derive income from generation and/or storage, demand customers whose goal is to reduce operating costs, and larger customers who have invested in LCTs for social responsibility reasons. They are very likely to be responding to time of use signals, including managing demand or export at times of peak demand. While these customers will have bilateral contracts with suppliers for energy services, they will not have contracts for services with TSOs or DSOs. Typical customers in this category are storage providers, distributed generators and flexibility service operators, larger demand customers and community energy schemes; however, this category also includes aggregators managing exports and demand side management on behalf of multiple smaller customers.

- **Passive customers:**

  3. **Passive participants**

     This customer category includes smaller, energy-conscious customers (domestic or non-domestic) who have invested in 'off the shelf' LCTs to derive income from renewable energy schemes, for the purpose of reducing their overall costs or for social responsibility reasons. Electrical generation and/or consumption are unlikely to be actively managed and are instead installed and utilised on a passive 'fit and forget' basis. 'Off the shelf' LCTs in this case include solar panels, heat pumps, electric vehicles and other smart devices. These customers are likely to both be exporting and importing and would seek to benefit from time of use tariffs offered by suppliers.

  4. **Passive consumers**

     This customer category would normally comprise domestic or smaller non-domestic demand customers with little or no interest in the flexible energy market or LCTs. These customers may have smart appliances and, in due course, could agree smart energy contracts with suppliers and aggregators *(at which point the key relationship is between the DSO and the aggregator / supplier, and thereafter the customer would progress out of this category)*.

     This category includes customers in social or private housing with or without access to a community energy supply contract via their landlord. These customers are likely to be on a standard supplier tariff.

Q8: Do you agree with the five measures identified to "enable and protect" consumers?

If 'no', please outline what else should be included?

a) Making available information and advice

b) Offering proactive "wrap-around" support

c) Providing financial support measures

d) Driving change

e) Reviewing statutory protections

No. Qualification outlined below

The measures identified appear to be comprehensive, however NIE Networks would suggest consideration also be given to the following:

1. A review of how network costs are attributed to consumers to ensure that, with the changes on how customers use the networks, the costs attributed to different types of customers remain fair and proportionate. Tariff reform is required to provide protection to passive and vulnerable customers while enabling and incentivising innovation and efficient use of the networks:
   - A suitable connection charging framework will ensure that Northern Ireland is as attractive for investment as neighbouring jurisdictions. It will also facilitate the connection of renewables,

battery storage and Low Carbon Technologies *(LCTs)* which includes Electric Vehicle *(EV)* charging infrastructure. We consider that an appropriate charging methodology is essential to facilitate the achievement of all aspects of the new energy strategy *(i.e. renewable energy, heat and transport)*. The current charging mechanism is deterring many domestic customers who are "early adopters" from connecting LCTs. However, the risk of unaffordability for customers connecting to the network will become heightened further, as legislative changes (such as changes to building regulations) mandate the inclusion of low carbon technologies in new build domestic properties. This is a particular problem in Northern Ireland since, unlike GB, the distribution connection charging policy requires the full connection charge, including network reinforcement *(up to one voltage level up)*, to be levied directly on the connecting customer. By contrast, in GB customers pay upfront for new distribution network connecting assets but only a share of any necessary reinforcement of the upstream network. The remainder of reinforcement costs is socialised and recovered within GB network charges or through subsequent connections.

Furthermore, Ofgem is currently considering reducing, or removing entirely, any network reinforcement costs included in charges applied to customers connecting LCTs. It has been assessing whether current connection charging arrangements are continuing to work in the best interests of consumers – especially in light of increased investment needed as we electrify heat and transport. It has just published a consultation 'Access and Forward-looking Charges Significant Code Review: Consultation on Minded to Positions' ***(https://www.ofgem.gov.uk/sites/default/files/2021-06/%281%29%20Ofgem%20Access%20SCR%20-%20Consultation%20on%20Minded%20to%20Positions.pdf)*** which states;

'We think there are good arguments that the charging arrangements no longer provide an effective signal for network users and may actually slow down the roll-out of low carbon technologies across the energy system. We are therefore minded to change the connection charging arrangements. We propose reducing the contribution to reinforcement within the upfront connection charge for generation and removing it completely for demand. This comes at a cost, but we think this is the right balance between maximising benefits such as removing barriers *(particularly for those where we think their ability to relocate in response to a connection charge signal is limited)*, and doing so at least cost to consumers generally'

This minded to position is indicating a further move towards shallower connection charges which could widen the gap in methodology with Northern Ireland if connection charge policy was to remain the same thus impacting further the competitiveness of Northern Ireland.

In RoI, a proportion of the cost of connection is socialised. It is not appropriate for NIE Networks to recommend a particular approach to changing distribution connections charging in Northern Ireland. We consider that any decision for change should be based on robust analysis and the outcome of consultation with a wide range of stakeholders. Through our analysis of connections charging in neighbouring jurisdictions and the connections charging history in Northern Ireland, we consider alternative connections charging arrangements could include:

- Apportionment based on capacity required by connecting customer;
- Standard connection costs for different categories of generation;
- Shallow charging boundary;
- Reintroduction of a connections subsidy.

Based on the feedback received from customers and the importance of the connections process in delivering a green economic recovery in Northern Ireland, and to achieving 2030 Energy Strategy targets, NIE Networks considers there is a window of opportunity to review the current regime before significant barriers to connecting start to materialise. Depending on the alternative connections charging methodology that could be chosen, the impact on each category of connecting customer and the impact on the wider Northern Ireland consumer will vary.

With the opportunity to grow demand, we consider the proposed changes to Connections Charging can be at least self-funding and if we do not consider the current approach against a backdrop of the forthcoming Energy Strategy, Northern Ireland is at risk of not achieving the Energy Strategy targets, and the Northern Ireland economy will not grow to the extent that it otherwise could have. As such, we would advocate for an urgent review of, and consultation on, the connection policy and distribution connection charging regulations in Northern Ireland.

- **Tariff reform** to provide fair cost recovery and ensure passive / vulnerable customers are not paying a higher proportion of network costs than is appropriate.
    - Our Distribution Use of System *(DUoS)* tariffs currently are primarily volume based, with approximately 74% of distribution revenue recovered from unit *(kWh based)* charges. However, there are a number of potential issues with this volumetric approach which could prove problematic as we transition to net zero carbon.
    - Firstly, as more and more customers start self-generating, the volume of electricity they consume via the distribution network may reduce in aggregate; and so, under the current volume driven tariff arrangements, the contribution they make towards network costs may also reduce. The end result could be that a higher proportion of network costs are left to be recovered from customers who are more reliant on the electricity distribution network for meeting their electrical demands and this could be considered to be unfair.
    - A second issue, and one which may serve to counterbalance the above issue of reduced consumption via the distribution network, is that customers may end up consuming a much greater volume of electricity units to heat their homes and/or charge their electric vehicles. If their electrical demands are met only via the network, these customers would end up paying proportionately more towards network costs under the current volume-driven tariff arrangements than they did before and this, again, could be considered to be unfair.
    - To address these issues, it may be more appropriate if in future, the DUoS tariffing arrangements are amended from primarily a volumetric approach to a more capacity charging approach – much like paying for broadband capacity rather than data usage. Accordingly, NIE Networks would support a comprehensive review of the DUoS charging methodology to be led by government and/or the Utility Regulator. This review could include detailed analysis of the allocation of costs to customer groups and types of charge.
- **Tariffs** should also provide the right price signals to encourage and reward consumer behaviours which reduce future cost for all customers. Smart metering is required to enable these considerations:
    - Development of new tariff groups or charging arrangements. Developing new cost reflective tariffs or charging arrangements to recognise common modes of behaviour, with price incentives for LCT and flexible users and charging arrangements to encourage generators to locate close to customer demand;
    - Development of Time of Use pricing. This area of reform has two parts:
        - Encouraging a higher uptake in Economy 7 type tariffs by small business and domestic customers in general; and
        - Developing appropriate time of use charging arrangements for new technologies.

2. The Introduction of smart meters will provide better and real time information on energy usage and facilitate the introduction of more flexible tariffs. The digitalisation of the energy industry is a fundamental foundation to a net-zero future and is reflected as a principle of the Consultation. Data helps network owners manage their systems more efficiently and helps customers make more informed choices about their consumption. Smart *(or intelligent)* meters and the associated telecommunications infrastructure gives access to this data, providing information on energy usage helping customers be energy efficient and save money.

   The information provided by smart meters will help consumers to make more informed choices about their consumption, provide accurate and regular information on their energy usage, and eliminate the need for estimated bills. Smart meters are an essential foundation to maximise the benefit of renewable generation capability and low carbon technologies, and offer consumers information and choice such as availing of cheaper energy at off-peak periods. Smart meters are also important to ensure protection of vulnerable customers to ensure they are treated fairly, have the opportunity to have access to energy data and make informed decisions about energy use and potentially have the ability to participate in new energy markets *(possibly through an aggregator)*.

   Smart meters have already been rolled out across Europe, with Italy, Sweden, Finland, Spain and Norway having reached close to 100% penetration.

   In January 2019, the first phase of a £1.1billion national electricity meter replacement programme to introduce smart meters to homes and businesses was announced in RoI. This follows positive trials in RoI demonstrating a 2.5% reduction in overall demand and an eight per cent reduction in energy in peak-time demand. These results are broadly in line with experiences in other European countries, where total energy savings were in the region of two to three per cent. Ireland has currently reached approximately 15% of homes with smart meters in its rollout programme and smart tariffs are

being offered by most major suppliers. Despite initial teething problems experienced in GB, BEIS is supportive of a continued roll-out, citing potential savings of £40 billion between now and 2050.

NIE Networks is ready to assist in a cost benefit analysis for a smart meter roll-out in conjunction with the Department for the Economy, the Utility Regulator, industry and stakeholders however would support the initiation of a trial of significant scale for smart meters as part of an integrated solutions for customers using low carbon technologies.

3. Consider development of electricity markets to enable new opportunities for consumers. This needs to be done in a way which ensures there is appropriate arrangements for trading and/or charging without discrimination.

   How customers engage with energy markets will evolve with time, and customers may move between the categories described in Q7 above, depending on their needs and circumstances. It is also clear that not every customer will want to or be able to take advantage of value-gaining opportunities created by new energy markets. Therefore, it is crucial that changes to the workings of energy markets must be made to work for all customers whether they are acting in an active or passive manner.

   NIE Networks can facilitate active and engaged customers by creating the right conditions for new electricity markets and services to flourish. One example of this is the ongoing Flex project which is developing a platform for customers to provide flexibility services to the Distribution System Operator *(DSO)* in exchange for financial reward. Additionally, NIE Networks will facilitate distribution customers participating in electricity markets through services such as reducing demand, increasing generation or adjusting reactive power in response to system events or in receipt of a dispatch signal while ensuring that the quality, safety and security of supply is maintained for all customers.

4. A vital consideration is to ensure that vulnerable customers are not left behind in the transition. A key challenge will be how to identify vulnerable customers and what steps will be taken *(and by whom)* to proactively engage with these customers. The changes that will emerge with the energy transition and journey to Net Zero have a risk of being unequal in the sharing of system benefits and costs; and to potentially leave people behind in terms of the complexity and cost of participation in the full range of benefits of the future energy system.

   Risks would arise through customers:

   - having insufficient access to finance for the upfront costs needed for new technologies;
   - lacking the skills, knowledge and/or confidence needed to use the technologies, apps or websites etc to avail of new services;
   - not being sufficiently motivated to engage and participate in the energy market; or
   - feeling a lack of trust in energy suppliers and other companies in the energy market, and so do not wish to avail of any services that hand over control of their consumption *(or generation)*.

   For such customers the potential impacts, absent any remedial actions to prevent these, could be:

   - missing out on the rewards of active engagement by way of receiving better services, or paying less for services, or receiving an income for providing services back to the network; and/or
   - finding themselves saddled with extra costs e.g. if a large number of engaged customers go 'off-grid', it could result in those left on the grid having to pay more for it.

NIE Networks considers there are ways that to minimise the detriment experienced by any such customers and NIE Networks is committed to playing its part in:

- addressing the problem of lack of skills, knowledge and/or confidence by ensuring the quality and accessibility of information to the public.
- working towards introducing reforms to the Distribution Use of System *(DUoS)* tariffing arrangements, to ensure that costs of the network are paid for in a manner which is fair to all customers *(see point 1 above)*; and
- focusing on efficient delivery of services in general to ensure any expenditure on the network is necessary and is incurred as efficiently as possible.

Q9: Do you agree with the proposed scope of the "one stop shop"?

Please advise on any different activities you think should be included.

Yes, NIE Networks agrees with the proposed scope of the one stop shop *(OSS)* and would advocate for an approach similar to that adopted in Ireland with the Sustainable Energy Authority of Ireland *(SEAI)*. In addition to what has been outlined in the Consultation, we would propose such an OSS should have a number of additional functions:

- Promotion of a sustainable energy future;
- Provision on information to customers – up to date information on the wide range of sustainable energy technologies and measures that homes and business can consider to make their premises and operations more energy efficient and sustainable;
- Information on all available funding mechanisms available to support customers in adopting a range of energy improvement measures. Provision of assistance to apply for financial support;
- Design services for energy efficiency – providing services or signposting to third parties who can provide detailed bespoke services to customers;
- Maintain lists of accredited suppliers and installers;
- project management services - from appointment of accredited / approved contractors through to point of delivery of measures on site;
- Support for research, development and innovation in clean energy.

A proactive approach is essential for vulnerable customers who may be unaware of or unable to facilitate the benefits to which they are entitled.

It is important that it's as easy as possible for customers to arrive at a resolution to their queries and, in order to do this, the process needs to be as straightforward as possible, avoiding hand-offs.

Q10: Which approach do you think should be taken to create this organisation? Please outline your rationale and select one option from *(a)* to *(d)*:

a) Virtual 'one stop shop'

b) Fund an external delivery organisation

c) Expand remit of an existing organisation

d) Create a new sustainable energy organisation as an Arm's Length Body of DfE

NIE Networks does not have a strong view other than its scope and remit being wide enough to cover all aspects in Q9 and also its independence to provide balanced and accurate information for all customers. Option *(b)* may be the best option if its scope is wide enough to ensure that the majority of customer queries/ issues are dealt with at the first point of contact. The One Stop Shop should seek responses to customer queries from the relevant experts and/or delivery bodies rather than sign posting them to the appropriate people/organisations.

Q11: Do you believe that additional financial assistance to protect certain groups of consumers should be introduced?

If so, please identify what consumers should be targeted and what support would be needed.

- Vulnerable
- Other domestics
- Business energy Small
- Business energy Large

Yes *(tick all)*

The challenge is in defining exactly which consumers should be targeted and the level of support required and offered. Support should be provided to 'vulnerable' customers but this definition requires clarity to identify specifically who should receive support.

In order for the energy transition to be fair and just, it is clear that a range of financial support mechanisms will be required from Government-funded programmes for appropriate customer sectors. An important

consideration will be the policy decisions made in this Energy Framework that will drive changes for the citizen.

For example, consider buildings and heating: Changes to Building Regulations and energy efficiency retrofit programmes will have consequences for most homeowners. Together with the potential banning of fossil fuels for heating – and indeed considerations on incentives such as rates reductions for those able to improve their dwellings – could lead to a transition which is only affordable to those able to pay. It is important, therefore, that financial support schemes are designed appropriately for a range of customer groupings so that benefits of the transition are accessible to all.

GROW A GREEN ECONOMY

Q12: Do you agree with the four identified priority clean energy sectors:

a) Energy efficiency

b) Renewable energy

c) Hydrogen economy

d) Circular economy

Please advise on any additional areas that you believe should be prioritised and your reasons for this.

Yes to a) to d) but qualified below.

Page 34 of Consultation refers to renewable heat and low emission vehicles *(Heat and Transport sectors*) which should be covered. Since the strategy makes clear reference to "investing in renewable energy across power, heat and transport", the heat and transport sectors are possibly covered in this respect. Consideration should be given as to how these two sectors might also cross over with the hydrogen economy.

Innovation should be another key sector worthy of a separate consideration in clean energy. Northern Ireland has a unique opportunity – it is world leading in RES-E *(Renewable Energy Sources – Electricity)* and levels of embedded decentralised generation meaning we have unique opportunities to use the electricity system as a test bed for new and emerging technologies, which can be trialled, developed and then ultimately exported.

Q13: Do you agree with the economic growth opportunities identified within energy efficiency? What supporting policies do you believe are needed to take advantage of these?

Yes

In the document 'Powering a climate-neutral economy: An EU Strategy for Energy System Integration', energy efficiency is listed as the first of the three key strategies for energy system integration to provide low carbon, reliant and resource efficient energy, since it reduces the overall investment required to achieve carbon neutrality. The two other main pillars of this strategy are electrification and the use of clean fuels.

Areas of Policy priorities are required in the following areas:

Electricity Network

Energy efficiency should be considered in the context of connecting to the network, network investment and electricity usage:

Connecting to the network

The cost of connecting to the distribution electricity network in Northern Ireland is higher to the party seeking connection than in neighbouring regions, by virtue of the method of apportioning costs between the party seeking connection and the wider customer base through the socialised charge.

Overall distribution connection costs in Northern Ireland are comparable to those in GB and ROI; however how the overall costs are attributed to the connecting customer and the wider customer base are different. For customers connecting to the distribution network in Northern Ireland, total connection costs are chargeable to the connecting customer *(including connection assets and reinforcement required at the connection voltage and one voltage level up)*. However, in neighbouring jurisdictions, the reinforcement costs are socialised across the wider customer base and are either not chargeable to the connecting customer or only a portion is chargeable.

A suitable connection charging framework will ensure that Northern Ireland is as attractive for investment

as neighbouring jurisdictions. It will also facilitate the connection of renewables, battery storage and Low Carbon Technologies *(LCTs)* which includes Electric Vehicle *(EV)* charging infrastructure. We consider that an appropriate charging methodology is essential to facilitate the achievement of all aspects of the new energy strategy *(i.e. renewable energy, heat and transport)*. To assess this further, NIE Networks proposes to issue a Call for Evidence on its Statement of Connection Charges *(SoCC)* in Q3 2021.

In addition, there will be further consultations on After Diversity Maximum Demand *(ADMD)* and Cluster methodology which will be essential to ensure that customers and the network can continue to develop in an efficient manner.

The cluster methodology has been a major success in facilitating the connection of renewable generation in Northern Ireland, and a major contributor towards the early achievement of the 2020 40% target.

The cluster methodology has provided significant capacity, technical and environmental benefits for the connection of renewable generation in Northern Ireland. In the light of future targets, it is appropriate that the cluster methodology is reviewed so that assets are utilised efficiently to facilitate the delivery of these targets.

After diversity maximum demand *(ADMD)* accounts for the coincident peak load a network will experience over its lifetime and is based on the number of dwellings and house type on a particular network. This value currently varies between c.5kVA for a single detached dwelling to c.2kVA for 100 terraced dwellings. With the increasing load at LV due to the connection of Low Carbon Technologies *(LCTs)*, such as electric vehicle chargers and heat pumps, the current network design may not facilitate this coincident peak load.

Within the ADMD consultation, we are seeking opinions on increasing this rating to between 7kVA and 18kVA, depending on dwelling type and number of connections. Higher capacity networks will increase the connection cost for customers based on our current SoCC, highlighting the need to move towards a more socialised charging mechanism.

Proactive investment

To ensure customers are able to make energy efficiency investments, it is important the electricity network is ready and capable of enabling such measures - particularly in the areas of adoption of low carbon technologies. There is a substantial amount of investment still to be undertaken within the current regulatory price control which will run until 2024. NIE Networks could scale up to deliver potentially an additional £50 million of work annually, supporting a significant local supply chain by working proactively to accelerate investment alongside other industry bodies. This would involve bringing forward key infrastructure projects currently planned for 2024-2026 to 2021-2023. NIE Networks and SONI are developing proposals which require a fast track approach to be adopted by both the Utility Regulator for approval and the Planning Service to ensure projects can be delivered on the ground efficiently:

- The current Northern Ireland planning processes should be revised to ensure renewable infrastructure projects and other major grid projects are brought forward quickly and that NIE Networks can make anticipatory investments in the network now subject to Regulatory approval, ahead of future need and demand. NIE Networks advocate for a consistent and fast-tracked planning process implemented for 'green development' projects which prioritises the efficient delivery of low carbon and renewable projects with appropriate targets, timeframes and accountabilities.
- Broadening the mandate of the Utility Regulator to consider the need for decarbonisation and economic development would provide an opportunity to create a forward-looking regulatory framework that supports innovation and strategic investment. If the regulatory mandate permitted building infrastructure ahead of need, areas of investment in both the electricity grid and the necessary supporting telecommunications, IT and data infrastructure, could be identified and progressed. This would facilitate the accelerated development and uptake of LCTs and attract investors, all while delivering the best value for customers.
- We need to think strategically and longer term about infrastructure investment and delivery. The Infrastructure Minister set up a ministerial advisory panel to review this issue and it concluded that there is widespread support across political parties, businesses and communities to see an Infrastructure Commission here in Northern Ireland. An infrastructure commission could be transformative for citizens and communities across Northern Ireland and deliver this much needed, strategic, expert lead approach to long term investment and delivery of infrastructure.

Electricity Usage

It is important that electricity consumers are empowered to be able to make energy efficiency decisions and avail of new and emerging markets *(e.g. FLEX)*. To do this, they must have access to usage data and pricing information. As such, NIE Networks considers smart metering an essential enabler for this and advocated for an urgent review of the costs and benefits to enable a smart metering programme to be implemented in Northern Ireland *(see response to Q73)*.

Moreover, a tariff reform is also required to ensure that cost reflectivity is maintained as decarbonisation of various sectors continues. In particular, this is vitally important to ensure that fuel poor and vulnerable customers are suitably protected, whilst providing the flexibility in tariffs to encourage customer to act in a manner which supports the network. *(ref response to Q8)*

It is also important to consider the holistic view of the impact of connection charging on customers. If development/growth is restricted by connection costs, then the customer is losing the cost saving that would be generated by overall higher electricity consumption.

NIE Networks is seeing examples of businesses *(small and large)* who are experiencing growth in their market and yet when they receive a connection offer are shocked by the cost of connection. This is due to the charging policy applied to the reinforcement required to provide additional capacity in their local network. Costs are 100% chargeable even if the reinforcements *(when carried out based on the Lowest Cost Technically Acceptable (LCTA) principle)* will create capacity over and above what is needed by this individual customer, capacity that can then be subsequently utilised by other customers at no cost. Demand growth in the Republic of Ireland shows a total electricity requirement *(TER)* growth of circa. 30% to 2029 based on 2020 levels mainly due to connection of data centres and large energy users. The significant investment in large demand connections in ROI is not being replicated in Northern Ireland *(similar growth in TER is estimated at 10%)*. We consider that Northern Ireland is missing an opportunity for inward investment, job creation, economic growth which would result in an improving fuel poverty situation.

Other areas of policy urgently required to realise economic growth opportunities identified within energy efficiency are:

Buildings

The Committee on Climate Change *(CCC)* has recommended energy efficiency improvements in over half of existing homes in the UK by 2035. This will likely require a national investment programme costing an average of £10,000 per home over a 30-year period. It is estimated that investment in the efficiency of buildings across the UK could save up to 71 MtCO2e between 2023 and 2032. This is equivalent to 16% of the UK's emissions in 2018. Additionally, the 6th Carbon Budget recommends that all new buildings are zero carbon by 2025 at the latest.

- Building regulations for new homes standards

  To increase the efficiency of new builds and avoid the need to retro-fit properties at high cost, the UK government has proposed The Future Homes Standard – due to be introduced before 2025. NIE Networks is aware of the work being undertaken by the Department of Finance in reviewing the current building regulations. It is imperative that new buildings are future proofed so that they are compliant with the Future Homes standard, mitigating the need for further retrofit in the future. This, alongside ensuring that they are capable of installing low / zero carbon heating systems, is a key first step in addressing the efficiency of housing stock in Northern Ireland. Homes built to this standard will produce 75% – 80% fewer carbon emissions than houses built to current standards. This has the potential to benefit customers and contribute to net zero energy targets, since the annual energy cost of a Band C home can be up to £750 less than a Band E rated home. In addition, new buildings should not have fossil fuel boilers installed to avoid the owner being locked into a prolonged period of high carbon emissions

- Policy of retrofit programmes of existing buildings

  Northern Ireland needs an expansive energy efficiency upgrade programme which greatly improves the fabric of domestic and commercial buildings, thereby reducing their energy demand. This will provide local jobs in Northern Ireland, alongside reducing reliance on fossil fuel imports. The recent report commissioned by the DfE entitled 'Research into the Future of Energy Efficiency in Northern Ireland' concluded that, to align with the 2050 Net Zero commitment, policies will be needed to drive retrofitting of more than 50,000 buildings per year in Northern Ireland within the next decade – more than treble the current rate. The Economy Minister further stated: "Our local energy efficiency sector has the potential to grow significantly over the coming years, providing skills development and job opportunities."

Transport

- EV Charging strategy

  It is widely accepted that electrification, i.e. using renewable electricity to charge battery powered vehicles, will play a key role in the decarbonisation of transport. Hydrogen is also likely to play a role, particularly for larger vehicles that need to cover long distances. To facilitate and support this transition in Northern Ireland, the most urgent action required is for a strategy to create a holistic EV charging infrastructure within Northern Ireland that will provide confidence to customers considering the

purchase of an EV. It is important that a holistic approach is taken to planning EV charging needs for Northern Ireland. Significant progress has been made on some barriers, with recent decisions by the Utility Regulator in respect of the cap on the retail price that could be charged for electricity at charge points. Further significant progress has been made by the DfI in respect of planning issues. The key barriers that remain, however, are:

- A lack of a clear strategy – NIE Networks advocates that a Northern Ireland Cross-Departmental Government EV Taskforce is convened with representatives from key industry stakeholders such as motor distributors, infrastructure providers and representation from the Northern Ireland Local Authorities *(similar to the 'Plugged in Places' Programme)* to explore how best to set and move forward with Northern Ireland's EV ambitions including charging infrastructure.
- Funding mechanism – the same taskforce should additionally explore funding options.

In addition, the rollout of smart meters is a key enabler for provision of EV infrastructure and in particular the enabling electricity network required for charger connections. Through smart metering, critical information on charging demands and cycles will aid the investment decision making to ensure the network capacity is made available ahead of need. *(see also response to Q57)*

Education and advice

Customers will, in most instances, require access to fair, impartial and comprehensive advice and information to enable informed decision making. Energy is already a challenging area for domestic customers to understand even before adding the complexity that the energy transition will bring. The Consultation has proposed the formation of a 'One-stop-shop' to provide this range of information and advice together with a range of other services to customers. *(see also response to Q9)*

Q14: Do you agree with the economic growth opportunities identified within renewable energy? What supporting policies do you believe are needed to take advantage of these?

Yes but qualified below.

In our paper to the Economy Committee, entitle 'Green Recovery' ***(https://www.nienetworks.co.uk/documents/future_plans/green-recovery-briefing-paper-to-economy-committee.aspx)*** we outline areas of policy required to be progressed to support the economy by unlocking investment in low carbon infrastructure and fast-tracking decarbonisation of heat and transport. These proposals would enable Northern Ireland to tackle the climate emergency and to compete economically with our neighbours in Great Britain and the Republic of Ireland.

Joining up policy and regulation to encourage investment

- **Regulatory mandate**
  - Expand the mandate of the Utility Regulator to allow it to consider net zero and wider economic benefits for Northern Ireland consumers, in tandem with protecting consumers' interests;
  - Endorse the requirement for a regulatory model that enables anticipatory investment that facilitates accelerated development of low carbon technologies and attracts investors; while delivering best value for customer.
- **Connection charging policy**
  - Commence a review of connection charging policies and regulations to align Northern Ireland with other regions, making it competitive and an attractive place to invest.
- **Accelerate investment in renewables**
  - Accelerate consideration of route to market solutions for renewable energy;
  - Be proactive in facilitating enduring legislation/ licence changes to ensure connections process in Northern Ireland enables achieving 2030.
- **Bringing forward enabling investment** to provide the infrastructure required for a new target for renewables.
- **Endorse regulatory actions** to accelerate forward investment in the network.
- **Improve the planning process**
  - Develop a consistent, coordinated and fast-tracked planning process outlined in a new

Northern Ireland strategic planning policy which prioritises the efficient delivery of low carbon and renewable projects with appropriate targets, timeframes and accountabilities;

- Ensure the existing Department-led forum has a renewable focus and considers best practice models from around the world;
- Provide clearer guidance to local planning authorities on the efficient application of current planning regulations, including setting binding timescales and increased accountability for statutory consultees;

o **Delivery of Electric Vehicle *(EV)* charging infrastructure**

- Establish an EV Taskforce to propose interim policy changes to Government that will help grow electric vehicle uptake in Northern Ireland and remove barriers to EV infrastructure roll out. The group should also determine optimal strategy for modernisation of the existing assets;
- Engage with UK Government to seek to create an EV Infrastructure Investment fund specifically for Northern Ireland to ensure that UK funding is apportioned equally between the regions. Funding must also be ring fenced so that when allocated to Northern Ireland, it serves its purpose – to support the transition to a low carbon economy.

o **Accelerate the digitalisation of the energy system**

- Urgently update the business case to consider implementation of smart – intelligent metering for Northern Ireland, focussed first on low carbon technology *(LCT)* customers and then on the broader customer base;
- Initiate a trial of significant scale for smart meters as part of an integrated solutions for customers using low carbon technologies.

o **Modernisation of Building Regulations**

- Set an end date for use of fossil fuel boilers in new homes, however this is only realistic alongside an update to the Building Regulations;
- Implement a date for changes to building regulations in line with GB and RoI to trigger an immediate industry response and in so doing, set a standard for insulation so that buildings are sufficiently insulated for low-carbon heating options;
- Develop funding streams options for retrofitting existing buildings for those able to pay and further support available to those less able to pay.

o **Innovation**

- Increase funding levels for projects – particularly those already underway and those underpinned by well-advanced technologies. Development of the Green Innovation Fund;
- Support decarbonisation trials at scale – this could include low-carbon heating solutions and smart meter amongst others;
- Encourage innovation across the supply chain, including leveraging opportunities in clean energy;
- Target new market opportunities for businesses involved in the development and delivery of low carbon technologies;
- Seek opportunities to expand our use of home-grown electricity, and to reduce our dependence on imports of fossil fuel.

o **Statement of Connection Charges *(SoCC)* and tariff reform**

- Distribution connection charging review, with the aim of facilitating connections for load, generation, LCTs and new technologies and industries at a fair price;
- Rebalancing of Distribution Use of System *(DUoS)* – reducing the proportion of costs recovered from volume-based unit charges and increasing the proportion recovered from fixed charges *(i.e. capacity or standing charges)* with a focus on fair and appropriate cost recovery from all customers;
- Develop new tariff groups or charging arrangements to recognise common modes of behaviour, with price incentives for LCT and flexible users and charging arrangements to encourage generators to locate close to customer demand;
- Time of Use *(ToU)* pricing – encouraging a higher uptake in Economy 7 type tariffs by small

business and domestic customers and developing ToU charging arrangements for new technologies.

- **ADMD consultation**
  - After diversity maximum demand *(ADMD)* accounts for the coincident peak load a network will experience over its lifetime and is based on the number of dwellings and house type on a particular network. This value currently varies between c.5kVA for a single detached dwelling to c.2kVA for 100 terraced dwellings. With the increasing load at low voltage *(LV)* due to the connection of Low Carbon Technologies *(LCTs)*, such as electric vehicle chargers and heat pumps, the current network design may not facilitate this coincident peak load;
  - Within the ADMD consultation, we are seeking opinions on increasing this rating to between 7kVA and 18kVA, depending on dwelling type and number of connections. Higher capacity networks will increase the connection cost for customers based on our current SoCC, highlighting the need to move towards a more socialised charging mechanism.
- **Cluster substation consultation**
  - The current cluster methodology has provided significant capacity, technical and environmental benefits for the connection of renewable generation in Northern Ireland. In the light of future targets, it is appropriate that the cluster methodology is reviewed so that assets are utilised efficiently to facilitate the delivery of these targets. The present cluster methodology was intended to facilitate solely the connection of renewable generation into cluster sites. NIE Networks now considers that network reinforcement costs to meet increases in demand, in particular associated with facilitating the future electrification of heat and transport to meet carbon reduction targets in more rural communities, can be minimised by utilising the existing cluster infrastructure;
  - The cluster consultation, which follows on from the Call for Evidence, sets out some key proposed changes to the cluster methodology. Some of the key proposals outlined in the consultation include allowing demand connections at cluster substations.
- **Support for solar PV and low carbon heating**
  - Provision of funding streams for adopters of solar PV and low carbon heating systems.
- **Connection charging methodology**
  - Low demand growth in Northern Ireland over the last decade*(s)* can, in part, be attributed to high connection costs acting as a deterrent for investment in Northern Ireland. A growth in demand will benefit Northern Ireland through job creation, economic growth, positive impact on fuel poverty and lower price of each unit of electricity.
  - The current connections charging methodology in Northern Ireland is out of step with the rest of the UK and ROI. Resulting in investment being redirected into markets with cheaper connection costs.

We believe a sense of urgency is needed to generate momentum in this area. While the Energy Strategy process will determine the long-term direction and the policy mechanisms to achieve that, there are many decisions that could be made now to help make progress pending conclusion of that process. We focus on low risk and least regrets options – tangible areas of opportunity to support the economy by unlocking investment in low carbon infrastructure and fast-tracking decarbonisation of heat and transport.

Economic opportunities:

NIE Networks has commissioned an independent study from KPMG entitled 'Electrification – Economic Opportunity for Northern Ireland' which examines the economic benefits of a high electrification strategy for Northern Ireland. NIE Networks will submit this report to the DfE Energy strategy process in early July and also make it available on the NIE Networks website.

Some key messages are:

- Renewable technologies associated with electrification are already proven at scale in EU and around the world and are falling rapidly in cost and can addresses the major non-agriculture sources of GHG in Northern Ireland;
- In the period 2022 to 2030 renewable capacity displaces fossil fuel generation from the power system –primarily gas-fired capacity. In the following years is it meets the increasing demands of heating and transport. This will require additional investment in the grid *(£1.4bn to 2040)*;
- By 2040 electric vehicles could represent 84% of all cars and taxis in Northern Ireland requiring

5,500 public charge points at an investment of £0.5bn but £0.8bn fossil fuel spend reduction;

- Electrification of building heat could see heat pumps reach c.375k in Northern Ireland by 2040 *(94% in residential buildings)*. Deployment of heat pumps would take place in parallel with building fabric upgrades further reducing fossil fuel consumption. This would require an additional £0.6bn investment in heat pumps but £0.5bn avoided fossil fuel spend;
- In the scenario assessed, electrification would require an investment of £9.5bn to 2040 including £3.2bn large scale renewables, £2.8bn in building efficiency measure and £1.7bn in the power network;
- There would be an increasing annual reduction in fossil fuel spend and by 2040 there would be £1.4bn annual reduction *(60% attributable to personal transport)*;
- It is estimated that c.5,000 roles would be created and sustained in the Northern Ireland economy during the period of investment *(to 2040)*;
- Using economic multipliers developed by Northern Ireland Statistics and Research Agency *(NISRA)* it is forecast that the investment in electrification of £9.6bn will have an overall positive impact of £18.8bn Gross Value Added *(GVA)*.

In addition a recent study performed by Accenture entitled 'System Value Analysis for Northern Ireland's 2030 Climate Targets' – June 2021 holistically evaluates economic, environmental, social and technical outcomes of potential energy solutions across markets for Northern Ireland.

http://www3.weforum.org/docs/Accenture_ESB_Northern_Ireland_System_Value_2021.pdf

It considers the possible options for across the various sectors in order for Northern Ireland to meet the Committee on Climate Change's 6th Carbon Budget proposed target of a 48% reduction in emissions by 2030 versus 1990. This entails reducing emissions from 19.4MtCO2eq by 6.8 MtCO2eq to 12.6 MtCO2eq by 2030. The report concludes that this carbon reduction is achievable with the following system value benefits:

- Power System
  - 15k – 23k jobs from onshore and offshore wind by 2030
  - £30m - £45m in human health benefits in 2030
- Light Duty Transport
  - 300-800 economy wide jobs in 2030
  - £85m - £127m in human health benefits in 2030
- Heavy Duty Transport
  - 1k – 4k economy wide jobs in 2030
  - £4m - £6m in human health benefits in 2030
- Housing
  - 84k – 112k economy wide jobs in 2030
  - £49m - £74m in human health benefits in 2030
- Industry
  - £13m - £19m in human health benefits in 203

In addition, the report assesses the positive wider system value benefits from the above sectors on energy productivity, system efficiency, resilience & security, reliability, service quality, flexibility, system upgrade and foreign direct investment.

Q15*: Do you agree with the economic growth opportunities identified for hydrogen production, demand and manufacturing within the hydrogen economy?

What supporting policies do you believe are needed to take advantage of these?

NIE Networks outlines its views on Hydrogen opportunities referencing the DfE's consultation and modelling.

Green hydrogen is likely to be the main hydrogen production technology in Northern Ireland, since there is a lack of CO2 storage that is required for blue hydrogen. In the near term, hydrogen applications are likely to be niche because the cost of electrolysis is very high *(although costs are expected to fall substantially over the next decade)*. Hydrogen has the potential to play a long-term role for hard-to-electrify sectors including some

parts of industry, heavy transport, and flexible power generation. It could also have wider use in heating, which is dependent on costs. There is likely to be a substantial long-term role for electrification in low heat industry, light vehicles and residential heat. Electrification and hydrogen can be complementary decarbonisation solutions.

NIE Networks intends to submit an independent study it commissioned from Frontier Economics into the hydrogen options for Northern Ireland which will also be published on the NIE Networks website. It is intended this will be available early July.

Production

Production is most likely to come from green hydrogen and imports. Given the DfE's emphasis on using indigenous renewable resources in Northern Ireland, and the lack of carbon storage sites currently under development, the focus is likely to be on green hydrogen *(albeit blue hydrogen as an interim solution should not be ruled out, should the DfE's emphasis change or new carbon storage potential is identified)*.

The majority of green hydrogen is likely to be produced from additional renewables, with curtailed wind likely to account for a modest proportion of production.

Meeting all low carbon hydrogen demand with indigenous renewables could require very high levels of additional dedicated wind capacity. In time, it may also be useful to import low carbon hydrogen as a complement to indigenous production, which could provide additional supply resilience.

Northern Ireland may be well placed for storage of hydrogen, with significant potential at the salt cavern at Larne.

Green hydrogen: the most likely option for hydrogen production in Northern Ireland

- Northern Ireland already has high levels of renewable electricity generation, which makes it well suited to green hydrogen production. In the near term, electrolysis is the most expensive hydrogen production method;
- However, costs are expected to fall substantially over the next 10 years. Curtailed wind and solar energy can provide lower cost production than building new generation *(although this may have limited scale)*;
- Hydrogen production from curtailed wind is unlikely to produce sufficient quantities for future needs and dedicated production or imports would be required but making use of curtailed wind in the short term may be more feasible and cost effective than building new dedicated renewables;
- Hydrogen production capacity will likely need to be supplemented by hydrogen storage for a number of reasons, depending on:
    - the uses to which the gas is put;
    - to smooth out short term *(e.g. within day)* production and demand fluctuations;
    - to meet the supply resilience needs of customers *(for example industrial customers, who cannot easily stop and start processes)*;
    - to ensure that the system can meet seasonal swings in heating demand.

Blue hydrogen: unlikely to be an option for Northern Ireland in the near or long term

- Blue hydrogen production is unlikely to be feasible in Northern Ireland in the near term due to a lack of carbon storage options. This appears to be inconsistent with DfE's modelling, which assumes a large role for hydrogen production using Steam Methane Reformer *(SMR)* with Carbon Capture and Storage *(CCS)*. The carbon storage location is unclear; it could be transported to storage sites in GB.
- In the longer term, shipping carbon to offshore storage sites in Scotland or northern England could be possible. However, blue hydrogen produces residual carbon emissions and therefore may not be compatible with 2050 climate goals for Northern Ireland. It would also rely on imports of methane and would not be compatible with the priority of using indigenous renewables.

Imports: unlikely to be an option in the near term, but some long-term potential

- Imports are unlikely to play a significant near-term role in Northern Ireland as they are not compatible with DfE's Energy Strategy principle of indigenous energy production, and there is currently no international liquid market for low-carbon hydrogen;
- In the longer term, imports of green hydrogen from Australia, Chile and the Middle East could be an attractive low-cost option if demand for hydrogen in Northern Ireland increases. Alternatively, imports

from GB/ROI may be possible where transportation costs will be lower *(for example via the Scotland to Northern Ireland Pipeline (SNIP))*.

Demand

There is a relatively large variation in projected low carbon hydrogen demand between the DfE's modelling and the Committee on Climate Change, particularly in the heat and transport sectors where DfE assumes a higher utilisation.

Road transport is likely to be a key source of hydrogen demand in Northern Ireland in the mid-to-long term

- DfE assumes a role for hydrogen in passenger car transport that is higher than many other European-level studies with 32% of fuel use for cars being met by low carbon hydrogen in 2050 in its gasification scenario and as much as 26%, even in its Diverse scenario. Generally, low carbon hydrogen is not thought to be an option at scale for passenger vehicles because electrification of passenger vehicles is progressing rapidly, and has the potential to be a cost-effective and practical option and in addition the refuelling infrastructure required for cars is likely to be more dispersed than that for HGVs and buses.
- Near term: Fuel Cell Electric Vehicles *(FCEVs)* are expensive and aren't widely commercially available today. In addition, there is no refuelling network to support vehicle take-up. Therefore, in the 2020s take-up is likely to be from public transport that can rely on centralised urban depot refuelling (with some localised storage) and may be able to access public funding for early demonstration projects. For example, the Translink/Wrightbus/Energia project is trialling hydrogen buses in Belfast. Some consumer-focused brands may convert their HGV fleets to FCEV if they are able to charge a 'green premium' for this (where cheaper electrification is not an option);
- Long term: Once the cost gap between FCEV and conventional vehicles decreases, hydrogen is likely to play an important role in decarbonising heavy-duty transport and buses because they have few alternative decarbonisation options. FCEVs are likely to remain more expensive than BEVs for passenger cars throughout the 2030s. DfE assumes a significant role for electrification of trucks in 2050, which is likely to relate to LGVs. Passenger cars are less likely to use hydrogen since electrification is a viable, better-established and cheaper alternative to FCEVs. There may be cost-effective applications in buses alongside electrification.

Industry is unlikely to be an early adopter of hydrogen, but some may convert in the longer term

- The DfE modelling suggest 20% of industrial energy demand will be provided by hydrogen in 2050. The Committee on Climate Change's *(CCC's)* range is from 8% to 25% of industrial demand by 2050. The CCC estimates that 18% - 31% of industry demand could be met by hydrogen in the UK as a whole which suggests a smaller role in NI than in GB.
- Near term: Hydrogen is unlikely to play a role at scale in Northern Ireland industry in the near term *(up to 2030)*. This is because the type of industry that is most technologically suited to hydrogen *(large scale heavy industry)* tends to be industry that requires highly resilient supply with a proven track record of several years. Some high-margin consumer-focused brands who can charge a 'green premium' on their products may be early hydrogen adopters, for example food and drink manufacturers could install small on-site electrolysers. In the near term, focus is likely to be in demonstration rather than largescale rollout to industry;
- Long term: High-heat industry has few alternative decarbonisation options to hydrogen. Electrification is usually not technologically possible, and post-combustion CCS may be unattractive as it adds process complexity. It is not clear whether CO2 storage will be available in Northern Ireland. Even if CCS is feasible, by transporting the CO2, this is likely to affect the cost competitiveness of post-combustion CCS with hydrogen. If industry goes for hydrogen, then there will be a question over how best to arrange production and transport to serve geographically dispersed customers *(i.e. centralised H2 production and H2 network build or decentralised production with more electricity network build)*. Low-heat industry is more likely to electrify as a cheaper alternative to hydrogen.

Residential heat may not provide significant hydrogen demand due to the high number of off-grid properties

- There is significant variation across DfE and CCC scenarios in the proportion of heating demand that is made up by low carbon hydrogen in 2050. DFE estimates that up to 35% of fuel use for heating could be provided by hydrogen by 2050, though it also considers scenarios with substantially less low carbon hydrogen and CCC scenarios see up to 16% being met by low carbon hydrogen, with around 30% met by low carbon gas as a whole.

- Near term: Blending hydrogen in the gas grid may be an early source of hydrogen demand.
- Long term: Some dense urban areas may be suitable for conversion to 100% hydrogen where Northern Ireland pipelines are compatible with hydrogen and where it is economic and safe to supply. However, switching domestic appliances and achieving customer buy-in may be challenging. In addition, substantial seasonal storage and a highly reliable supply of hydrogen would be required. For customers who are currently off-grid, direct electrification of heat may be a more cost-effective decarbonisation option given the uncertainty around whether hydrogen will be rolled out across the gas grid. For buildings on the gas grid there is likely to be a choice between low carbon gas and electrification, the choice coming down to cost, feasibility, consumer acceptability and the complexity of system wide coordination requirements associated with a switchover to hydrogen.

Power generation could make use of hydrogen in a high-electrification future scenario if enough storage is available

- There is a high degree of uncertainty over the future role of low carbon hydrogen in the Northern Irish power sector.
- Near term: Power plants may be able to accept blended hydrogen and methane without converting turbines;
- Long term: There will be a need for flexible, low carbon generation in the long term. Hydrogen is one option; however, it faces two challenges. First, the cost-effectiveness of this will depend on the availability of alternative low carbon flexible generation *(e.g. gas CCS)* or interconnection. Second, it would require a substantial amount of hydrogen transport and storage *(across Northern Ireland and ROI)*. DfE does not appear to see a large role for hydrogen use in power generation in its scenarios.

Q16: Do you agree with underpinning principles identified within the circular economy?

What supporting policies do you believe are needed to take advantage of the potential economic opportunities?

Yes

At NIE Networks, we believe firmly in the principles of a circular economy. A key principle is to ensure we as a province move away from the consumption of finite resources, rely less on imports and more on indigenous renewable sources and take waste out of our system and processes. The pace of technological progress and innovation has provided the means by which a circular economy is more achievable as renewable energy replaces fossil fuels which have been such a feature of Northern Ireland's reliance for its energy needs. The linear economy is changing through how we meet our energy needs and make the products required for the transition to zero carbon economy.

Investment in the electricity network and decarbonisation of power through indigenous sources, heat and transport through electrification and utilisation of other low carbon fuels sources, increases the uptake of home-grown energy and in turn these investments can be returned back in to the Northern Ireland economy. Money spent on fossil fuel ultimately goes to other economies. Although the initial capital costs of internal investment are higher than doing nothing, longer term it will support the ambition to save the Northern Ireland customer money whilst improving health outcomes, addressing fuel poverty and meeting decarbonisation ambitions.

NIE Networks commissioned a study by KPMG to identify the economic opportunity associated with electrification – recognising that there are also opportunities associated with other technologies. The report – Electrification – Economic Opportunity for Northern Ireland concludes that electrification of heating and transport systems would be transformative for both Northern Ireland's economy and environment, creating around 5,500 sustained jobs and lowering greenhouse gas emissions by the Committee on Climate Change's recommendation of 82% by 2050. NIE Networks will submit this report to the DfE Energy strategy process in early July and also make it available on the NIE Networks website.

Additionally, electrification has the potential to act as a catalyst for a wave of innovation as demand from the sector increases, creating a cluster of expertise which will be a springboard for international growth. As such, Northern Ireland could build a reputation for electrification technology knowledge.

The report estimates that electrifying heating and transport in Northern Ireland will require investment of £9.6 billion over the next two decades, a sum which will return gross value added *(GVA)* of £18.8 billion over the same period.

It found that existing technologies associated with electrification are capable of addressing decarbonisation of energy and that displacement of fossil fuels by renewable electricity will significantly reduce harmful emissions.

By electrifying heating through the use of heat pumps and other technology; electrifying transport through the

use of electric vehicles and by also prompting an overall increase in the use of renewable electricity from wind turbines as a main energy supply, Northern Ireland will be able to address targets to reduce the main non-agriculture sources of greenhouse gas.

Other headline findings in the report include:

Transport - Electric vehicles could represent 84% of all cars and taxis in Northern Ireland by 2040, a move which would need £0.5 billion investment between 2022 and 2040 to create 5,500 public charging points but which would reduce spend on fossil fuels by £0.8 billion.

Heating - Electrification of heating could see the use of heat pumps in Northern Ireland reach 375,000 in Northern Ireland by 2040, 94% of which are expected to be installed in residential buildings. It would require total investment of £0.6 billion but would avoid £0.5 billion in fossil fuel spend.

Power generation decarbonisation - In the period to 2030, renewable energy generation could displace fossil fuel generation from the power system and in the following years it will meet the increasing demand from heating and transport. The power network will require £1.7 billion in additional investment to support that transformation to install 5.4 gigawatts of additional renewable power. In so doing, it will displace 5 TWh of fossil fuels.

Electrification, like other green technologies, creates a once-in-a-generation opportunity to protect and enhance the environment for this and future generations. By starting the journey toward electrification of heating and transport now, we will be able to sharply reduce greenhouse gas emissions while also saving money and creating jobs.

Additionally, Northern Ireland will be able to benefit from the being ahead of the pack by creating a cluster of skills and expertise built around the move to electrification. It is clear electrification of Northern Ireland's heating and transport makes sound environmental and economic sense, but it will require the assistance of government to set a clear direction to stimulate demand through regulation and investment.

In terms of policy, we believe there are a few areas where policy adjustments can unlock investment in low carbon infrastructure and fast-track decarbonisation of heat and transport thereby supporting a circular economy. They include:

- Joining up policy and regulation to encourage investment;
  The regulatory mandate in Northern Ireland restricts the Utility Regulator *(UR)* from considering environmental and economic issues relating to the electricity sector in addition to its customer protection mandate, hindering capital investment. Broadening the mandate to consider the need for decarbonisation and economic development would provide an opportunity to create a regulatory framework that supports innovation and strategic investment. Change to the mandate requires DfE policy adjustment.
- Accelerating investment in renewables;
  Formal and clear targets are needed as well as a route to market for new renewable generation. Many renewable technologies no longer need substantial subsidies. However, they do need mechanisms to provide some certainty on market access and income streams to enable the investments to be bankable.
- Improving the planning process;
  NI needs a consistent, coordinated and fast-tracked planning process outlined in a new NI strategic planning policy which prioritises the efficient delivery of low carbon and renewable projects with appropriate targets, timeframes and accountabilities.
- Optimising innovation for Northern Ireland.
  To close the innovation gaps between Northern Ireland, GB and RoI, it is essential that we build on existing innovation in low carbon energy by investing in areas such as large-scale trials of heat pumps, hybrid heating schemes, hydrogen electrolysis, intelligent metering and energy storage. In particular, the undertaking of real-world trials is crucial to ensure that supply chains can develop; that the appropriate skills training is in place; that the public is better informed and engaged on the steps ahead; and that deployment can happen at scale. Although some trials are already underway here, increased levels of funding will enable solutions to be progressed much faster. This could save consumers and government money but it is crucial that there is a step change in the funding allocated to Northern Ireland to enable these innovation projects to develop at pace. Policy adjustments will be required to support this.

With these policy adjustments, we see lots of opportunities for the whole energy sector to contribute to economic growth and we firmly believe the transition to net zero energy is a positive economic opportunity for Northern Ireland, as we replace imported fossil fuels with indigenous renewable energy.

As a Distribution Network Operator, NIE Networks are paving the way to a decarbonised economy by promoting and facilitating the connection of renewable generation and low carbon technologies *(LCTs)* and operating the distribution system in a more dynamic, flexible and economic manner while maintaining safety, security and reliability.

There are many definitions in relation to what sustainability means, but in essence Sustainability focusses on meeting the needs of the present without compromising the ability of future generations to meet their needs. NIE Networks is committed to ensuring our business has a minimal or positive impact on the local, national and global environment, community, society and economy. Our Sustainability Strategy aligns with both the United Nations Sustainable Development Goals *(SDG)* and the European DSO *(E.DSO)* Sustainable Grid Charter, we also apply the IEMA Green House Gas management hierarchy to our Sustainability Action Plan.

- SDG 12 - 'Responsible Consumption and Production'
- E.DSO Commitment 3 – 'Operates with the minimum of materials necessary to conduct business operations safely and takes the life cycle of materials into account.'

  Commitment 3 is one of 4 key areas of focus in our 2021-24 Sustainability Action Plan. We recognise the effort to improve on our current position in this area is 'Medium' however the impact of improving is considered 'High'.
- IEMA Green House Gas Management Hierarchy – 'Avoid, Reduce, Substitute, Compensate'

We recognise that the number one priority to reduce our carbon impact is by first eliminating unnecessary energy consumption, reducing necessary consumption, then substituting with greener options and finally compensating any residual emissions as a last line of defence.

Our Objectives:

- **Carbon and Energy Reduction**
  - Reduce energy consumption and maximise the use of renewable energy at our buildings;
  - Drive continuous improvement in design and operation of our buildings portfolio;
  - Enhance biodiversity at our locations;
- **Supply Chain and Contracts**
  - Promote environmental and social transparency in our supply chain;
  - Prioritise sustainable materials and products;
  - Responsibly source consumables and services;
  - Partake in material resource exchange;
- **Health and Wellbeing**
  - Provide workplaces that complement mental and physical health and wellness;
- **Diversity and Inclusion**
  - Promote equality, diversity and inclusion.

Progress already made

NIE Networks actively:

- Refurbishes recovered plant and equipment that can be reused on the network and has done so for last 25 years or more.
- Captures and recycles SF6 for reuse on the network since 2019.
- Processes oil in-house with oil filtering plant since early 2020.
- Recycles >97% of excavated spoil.
- Partakes in material exchange programmes to upcycle unwanted pallets and cable drums.
- Condition monitors assets to extend their life *(plant and cables)*.
- Seeks to use of alternative insulating media where possible, improving fire rating and reducing civil requirements going forward.
- Educates staff on materials recovered from the network that can be refurbished and reused.
- Delivers outreach programmes to c. 18,000 young people per year.

Recognising that:

- Lifecycle of certain assets can be extended with condition monitoring.

- Designs can be slow to change.
- Cost has a bearing on life cycle.
- There is room for improvement in reducing material usage at NIE Networks i.e.
    - by responsibly sourcing materials
    - eliminating single use plastics
    - more planning at the concept stage of projects *(balanced with availability of materials/ spares to deliver programmes of work*).

NIE Networks has been awarded:

- Platinum Award in the Business in the Community Environmental Benchmarking Survey, 2020.
- Winner of the Business in the Community award for Responsible Business Champion – Environmental Leadership – 2020.

Plans in motion

NIE Networks is focussing on:

- All new office-fit outs considering sustainable materials, circular economy and Agile Home Working principles.
- Developing supply chain and contractor Carbon Footprint disclosure.
- Reducing single use plastic use in offices and from equipment suppliers, in tandem with our long-standing partnership with RSPB and through our internal working group established in 2020.
- Introducing alternative recycling initiatives such as reusing padlocks from network equipment.
- Requests from suppliers of new plant and equipment for alternative insulating media *(with the goal of moving away from gas and oil)*.
- Requests from suppliers of new plant and equipment to reduce maintenance requirements *(which in turn also reduces fleet mileage)*.
- Implementing 'green' initiatives at existing NIE Networks locations including enhancing biodiversity and carbon sequestering capability on company owned land and supporting the 'Belfast Million Trees' programme.
- Reducing printer and page usage in our offices.

Q17: Do you agree that we should develop a green innovation challenge fund?

If so, what scale and type of innovative projects should this support?

Yes,

To close the innovation gaps between Northern Ireland, GB and RoI, it is essential that we build on existing innovation in low carbon energy by investing in areas such as large-scale trials of heat pumps, hybrid heating schemes, hydrogen electrolysis, intelligent metering and energy storage. In particular, the undertaking of real-world trials is crucial to ensure that supply chains can develop; that the appropriate skills training is in place; that the public is better informed and engaged on the steps ahead; and that deployment can happen at scale. Although some trials are already underway here, increased levels of funding will enable solutions to be progressed much faster. This could save consumers and government money but it is crucial that there is a step change in the funding allocated to Northern Ireland to enable these innovation projects to develop at pace.

We suggest the Northern Ireland Executive considers the following:

- Increase funding levels for projects – particularly those already underway and those underpinned by well-advanced technologies;
- Support decarbonisation trials at scale – this could include low-carbon heating solutions and smart meter amongst others;
- Encourage innovation across the supply chain including leveraging opportunities in clean energy;
- Target new market opportunities for businesses involved in the development and delivery of low carbon technologies;

- Seek opportunities to expand our use of home-grown electricity, and to reduce our dependence on imports of fossil fuel.

The pilot Green Innovation Challenge Fund proposed for 2021 would be for support for early stage green innovation aligning with the priorities in the consultation and potential to deliver longer term economic benefit. Schemes exist in GB for electricity and gas utilities. It is important the business In Northern Ireland has similarly access to apply for similar funding to progress innovations that are currently being considered. It should be a fund specifically ringfenced for Northern Ireland and comparable per capita to other jurisdictions. e.g. Low Carbon Network Fund - £500m fund in GB.

Examples are:

- GB are world leaders in innovation in the electricity sector. However, this innovation is not "lift and shift" and requires considerable work to integrate into BaU solutions. Northern Ireland should ensure that we are leveraging the work already conducted in GB to avail of the benefits here. This requires funding support to ensure that technologies being trialled with a high probability of success in GB can be quickly and efficiently adopted onto the Northern Ireland networks;
- Community Energy Schemes – there is little by the way of Community Energy Schemes in Northern Ireland however there is opportunity to explore and trail these to demonstrate the potential.
- Electric Vehicle *(EV)* managed charging – with the rapid uptake expected in EV charging, trials in how EV chargers, especially at home and workplaces can be managed to ensure network capability is optimised through managed charging;
- Whole System Innovation – NIE Networks and Northern Ireland Water already involved in whole system innovation projects. 1-1 relationships between cross vector utilities in Northern Ireland represents brilliant opportunity to progress a plethora of whole system innovation to fully benefit from whole system integration;
- Where appropriate and considering the unique opportunities presented by the electricity system in Northern Ireland, the network could be used as a test bed for less technologically advanced innovation products. During this current price control period, NIE Networks has adopted more advanced innovation products previously trialled in GB. Northern Ireland can benefit from its unique characteristics, having a smaller network and almost 50% renewable consumption, which presents a real opportunity to trial early stage R&D type innovation projects on the network. There is benefit in collaborating with industry and academia for scoping and delivering these R&D projects, to reduce the risk to Northern Ireland customers.

Q18: Do you believe that we should work with the Utility Regulator to review how energy regulation can facilitate a green recovery and green innovation?

If so, how can this be done in a way which protects consumers from the higher risks associated with innovation projects?

Green recovery - Yes

Broadening the mandate of the Utility Regulator *(UR)* to consider the need for decarbonisation and economic development would provide an opportunity to create a forward-looking regulatory framework that supports innovation and strategic investment. If the regulatory mandate permitted building infrastructure ahead of need, areas of investment in both the electricity grid and the necessary supporting telecommunications, IT and data infrastructure, could be identified and progressed. This would facilitate the accelerated development and uptake of low carbon technologies *(LCTs)* and attract investors, all while delivering the best value for customers. NIE Networks additionally advocates for a review of connection charging policies and regulations to align Northern Ireland with other regions, making it an attractive and competitive place to invest. Through the joining up of policy setting and regulation, this would help Northern Ireland meet the long-term goal of Net Zero carbon, all whilst creating jobs and supply-chain opportunities and in turn energising cities, towns and villages across Northern Ireland.

Green Innovation - Yes

NIE Networks has not historically been funded to pursue research and development but to integrate suitably advanced smart and customer-based solutions trialled elsewhere within the industry into business as usual solutions. Whilst NIE Networks will continue to adopt this philosophy, we consider that it is appropriate we widen significantly the scope and quantum of innovative works in the future where this will bring real benefit to an integrated decarbonised energy system. We consider that we should focus this activity on less technologically advanced projects *(lower Technology Readiness Level or TRL)* either directly on the electricity network or in collaboration with academia and industry including other energy sectors e.g. hybrid heating

systems, managed Electric Vehicle *(EV)* charging etc. Collaboration projects will reduce the risk to Northern Ireland customers by reducing the funding required from NIE Networks.

This doesn't preclude being a 'fast follower' to successful innovation projects in GB, however utilising the unique characteristics of the network in Northern Ireland and the close relationships with industry will allow NIE Networks to be more proactive in innovating to benefit all customers. To facilitate this, a change in approach for innovation funding is required from the UR, to increase flexibility on network innovation funding.

Due to the Northern Ireland electricity system being small in nature, having a high level of dispersed renewable generation and limited interconnection, specific challenges are emerging that will require innovative solutions. These include an increasing level of congestion on the lower voltage networks and indeed the challenge of system stability as the level of intermittent renewable generation and consumption increases. These challenges are not so prevalent on the GB network and so it is important Northern Ireland can develop solutions in order to meet new 2030 targets. Whilst we propose we must investigate innovative projects that are less technologically advanced – having a lower TRL *(Technology readiness level)*, it is possible to minimise risk to customers through

a) selecting projects that although less advanced still have a high potential of success on the Northern Ireland network;

b) selecting projects that address specific Northern Ireland system needs; and

c) being prepared to cease a project early if it is assessed that it is unlikely to deliver the required benefits.

There is also the potential that Northern Ireland could develop local solutions for the Northern Ireland system challenges with local suppliers that ultimately can be marketed more widely in the future.

Q19: Do you agree with a focus on research mapping, research funding, business linkages and UK opportunity scanning to maximise the impact of the local research base with clean energy specialisms?

Please identify specific opportunities in the local research base that could be progressed.

Yes

Research mapping – We should maximise our research potential within Northern Ireland through the bodies referenced on the consultation *(Bryden Centre, CASE, CST, HySafer)* and also consider the wider academic research base within the local universities and colleges. The mapping exercise should highlight the areas of opportunity but also identify any areas where we may wish to consider research outside Northern Ireland establishments.

Research Funding – Funding is critical for research and innovation, however opportunities should be sought to secure private finance through linkages with business.

Business linkages – There are many examples of innovation business in Northern Ireland that have spun off from local universities and other high-tech business already engaged in R&D for offering products and services related to the energy transition. Links to business will be valuable for provision of knowledge, skills, training, funding and building partnerships in research. A further mapping exercise should be performed to map out these potential opportunities. NIE Networks is engaged in a number of research projects with organisations and academia:

- Rulet – University of Ulster *(UU)* and Northern Ireland Housing Executive *(NIHE)* - NIE Networks is supporting an Ulster University and Northern Ireland Housing Executive *(NIHE)* led project termed 'Rural Led Energy Transition' *(RULET)* which seeks to enable low-income households to act as participants in various energy markets and prevent them being left behind in the transition to smart, integrated energy systems. The project seeks to demonstrate and quantify how domestic electrical heating systems, combined with thermal storage and smart control technologies have the potential to create substantial system value by providing this flexibility;
- Energy Cloud – Supported by Distribution Network Operators, Transmission System Operators, developers, housing across Ireland. Seeks to use surplus renewable energy, which would otherwise be wasted, to power social housing homes and reduce fuel poverty on the island of Ireland;
- Girona - NIE Networks has been supporting Project Girona, with the Electric Storage Company, and is a smart-grid research and development project exploring the impact of small-scale electrical energy storage on the distribution network in Northern Ireland. The project offers businesses and domestic customers on the North Coast the opportunity to access clean energy, and aims to provide a more flexible approach for customers resulting in estimated savings of around 40% on domestic electricity

bills. Project Girona aims to reduce energy waste by providing generating customers with the ability to store renewable energy, through the installation of a battery storage system, for use whenever it is needed. The project is also exploring how energy flexibility as a service can be implemented by aggregating a number of battery storage systems to provide services in various markets including capacity, system services and network flexibility, helping to support the electricity system. Project Girona sets out to bring cheaper, cleaner, smarter and more flexible energy to domestic customers, providing an easy, inexpensive way to incorporate smart solutions like solar panels, battery storage and decarbonisation of heat and transport in their daily lives.

UK opportunity scanning – although Northern Ireland has some different regional challenges, the technologies required to be developed to enable the transition are similar, for example:

- Reform of building regulations and the challenges for a large scale retrofit programme;
- How to potentially decarbonise gas;
- Development of a heat pump market and associated skills;
- Meeting and increased renewables target with on and off-shore wind;
- Digitalisation and smart meter programmes.

Some jurisdictions are further advanced or have had specific experiences from which Northern Ireland can learn. Seeking out opportunities in the UK for learning and collaboration would help progress trials, schemes or projects on Northern Ireland. Similarly, we should also seek out opportunities with RoI, who have similar targets and challenges. From an electricity network perspective, where the two systems are interconnected, solutions on a whole network perspective should be pursued where appropriate and in the best interest of the Northern Ireland consumer. Furthermore, the scope of seeking opportunities for learning should not be restricted to UK/RoI but also seek opportunities and learning from EU and beyond.

Q20: Do you believe that utilising and tailoring existing education and training routes can meet the short-term skills needs of the clean energy sector?

How can activities within these routes be shaped to meet the needs of the sector?

Yes

There are already well-established routes in education and training, however there is currently a mismatch. They need to be focussed on the areas where there are skills gaps, have the ability to adapt quickly and be committed to the further development of pathways to meet the medium and long-term skills gaps.

To achieve this, all stakeholders *(government, academic, further education and industry)* need to work towards a common goal of initially identifying the future skills requirements and then assessing the capability of our education establishments to meet these new requirements. The key is the agility to adapt quickly and meet the changing needs of the energy sector. It is important to note we will still require many existing skills, however there is the need to build future skills for the energy sector with a focus on new and emerging technologies and to meet customers' needs/expectations as we transition to a net zero carbon economy. Whilst the individual organisations within the energy sector are well positioned to understand their own future needs, a substantial coordination exercise will be required to bring this together and understand the total quantum and, indeed, which sectors could be competing for similar resources.

In addition, we can develop retraining programmes for current employees and others external to our own organisations wishing to change the direction of their future careers. We need to ensure there is significant investment in providing the skills training required, since there will be a significant number of normal experienced leavers/retirees in the sector over the next 10 years alongside the many new roles needed to further develop a sustainable network.

Skills development also needs to ensure these are transferrable skills that include personal competencies and the principle of life-long learning. These opportunities need to be available more widely, with all the key stakeholders working in collaboration.

At NIE Networks we advocate for:

- Making apprenticeships available to more people;
- Working with sectors to create new apprenticeship pathways; and
- Launching a Flexible Skills Fund:
  - We will seek to utilise the comprehensive range of available training and education routes to provide the short-term skills needed by the clean energy sector by expanding existing programmes for youth training and reskilling existing workers;

- We will also seek to develop training and education routes that aim to meet the needs of the clean energy sector over the medium to longer-term. This will be achieved through courses in Further Education colleges, private training organisations and professional bodies providing work-based training and delivering technical qualifications and Higher-level education – including Higher Level Apprenticeships to support medium to longer-term advanced specialisms needed.

Q21: Do you agree with the proposal to establish an Energy Skills Forum to shape the future skills needs of clean energy sector?

If so, what do you believe the role, remit and membership of such a group should be?

Yes, however there needs to be an agreed commitment to a set of timebound outcomes.

The main outcome needs to be a strategic workforce plan and the steps/actions required to achieve this. It would important to review the current structures, forums and committees in place, together with any reports and research – then ensuring that the learnings from these input into an Energy Skills Forum Terms of Reference with an eye on focussing on this critical area and opportunity for future employment within Northern Ireland. The role has to be to review all current pathways, assess those that are working well, assess those not working as effectively, development of the apprenticeship frameworks to include higher level apprenticeships in many of the areas we have skills gaps in Northern Ireland now and in the future.

Membership should include representatives from across the energy sector/industry, Housing Executive representatives, education and government.

NIE Networks intends to make a more detailed submission to the Department on future skills requirements.

Q22: Do you believe that there is a need for specific measures aimed at ensuring a just transition in Northern Ireland?

If so, please advise on what the focus of these should be in addition to the education and training routes already proposed for a low carbon workforce.

Yes

NIE Networks believes a customer-centric approach is needed to deliver an energy strategy at the most efficient cost for customers. The cost of energy is important to customers and, as such, the outworking of policy must consider the impact on costs and be balanced across current and future generations. It is important that it is a just transition with measures put in place to support and protect the most vulnerable in our society.

Engaging and Empowering Customers

Customers will have opportunities if they so wish to engage on new energy markets, however not every customer will want to or be able to take advantage of value-gaining opportunities created by new energy markets.

- **Facilitating customer connections** - The participation in any new or existing markets will usually require customers to establish a new or modified connection to the distribution network. It is essential that the cost of connection is not prohibitive or acts as a barrier;
- **Helping active customers** – Creating optimum conditions for new electricity markets and services to flourish e.g. customers participating in electricity markets through services such as reducing demand, increasing generation;
- **Providing clear and accessible information for customers** – Customers will, in most instances, require access to fair, impartial and comprehensive advice and information to allow informed decision making. The formation of an independent body to furnish this advice to customers will be important – such as the one stop shop *(OSS)* proposed in the Consultation;
- **Smart metering** - Smart metering technology with accurate and timely consumption and financial data is essential for customers to have better control over how and when they use electricity.

Looking After All Customers

The changes that will emerge with the energy transition and journey to Net Zero have a risk of being unequal in the sharing of system benefits and costs; and to potentially leave people behind in terms of the complexity and cost of participation in the full range of benefits of the future energy system. Risks would arise through customers:

- Having insufficient access to finance for the upfront costs needed for new technologies;

- Lacking the skills, knowledge and/or confidence needed to use the technologies, apps or websites etc to avail of new services;
- Not being sufficiently motivated to engage and participate in the energy market; or
- Feeling a lack of trust in energy suppliers and other companies in the energy market, and so do not wish to avail of any services that hand over control of their consumption *(or generation)*.

For such customers the potential impacts, absent any remedial actions to prevent these, could be:

- Missing out on the rewards of active engagement by way of receiving better services, or paying less for services, or receiving an income for providing services back to the electricity network; and/or
- Finding themselves saddled with extra costs e.g. if a large number of engaged customers go 'off-grid', it could result in those left on the grid having to pay more for it.

NIE Networks considers there may be three direct ways that it can help minimise the detriment experienced by any such customers:

a) Providing vulnerable customers with helpful advice

In parallel to assisting active and engaged customers get the most out of the future energy system, we must do likewise for vulnerable customers who are passive and disengaged for reasons of lack of knowledge, understanding, finance or motivation.

This is clearly an area that requires greater consideration and collaboration to develop the idea further, including how best to create a coherent and coordinated programme that cuts across the various organisations with responsibilities for the protection of vulnerable customers. The ultimate aim would be to develop a programme *(or series of programmes)* of support which increases participation among specific vulnerable customer groups. NIE Networks will be launching its Vulnerable Customer Strategy in 2021.

b) Tariff reform

There are a number of potential issues with the current volumetric approach to Distribution Use of System *(DUOS)* tariffs which could prove problematic as we transition to Net Zero carbon:

- As more and more customers start self-generating, the volume of electricity they consume via the distribution network may reduce in aggregate, so the contribution they make towards network costs may also reduce. A higher proportion of network costs are left to be recovered from customers who are more reliant on the electricity distribution network for meeting their electrical demands and this could be considered to be unfair;
- A second issue, and one which may serve to counterbalance the above issue of reduced consumption via the distribution network, is that customers may end up consuming a much greater volume of electricity units to heat their homes and/or charge their electric vehicles. If their electrical demands are met only via the network, these customers would end up paying proportionately more towards network costs under the current volume-driven tariff arrangements than they did before and, again, this could be considered to be unfair.

To address these issues, it may be more appropriate if, in future, the DUoS tariffing arrangements are amended from primarily a volumetric approach to a more capacity charging approach - much like paying for broadband capacity rather than data usage. Accordingly, NIE Networks would support a comprehensive review of the DUoS charging methodology to be led by government and/or the Utility Regulator. This review could include detailed analysis of the allocation of costs to customer groups and types of charges. Such a review would focus on developing options as follows:

- Rebalancing of Duos charges - Reducing the proportion of costs recovered from volume-based unit charges and increasing the proportion recovered from fixed charges with a focus on a fair and appropriate cost recovery from all customers;
- Developing new tariff groups or charging arrangements – incentives for low carbon technology *(LCT)* and flexible users;
- Develop time of use pricing – encourage higher uptake in Economy 7 and develop new time of use charging for new technologies.

c) Customer Connections

A further area of impact for customers which is under consideration is the cost of connecting new customer premises or technologies to the distribution network. The current charging mechanism is deterring early adopters of LCTs and may deter many domestic customers from adopting LCTs in the

future. This is a particular problem in Northern Ireland since, unlike GB, the connection charging policy requires the full distribution connection charge, including network reinforcement, to be levied directly on the connecting customer.

By contrast in GB, customers pay upfront for new distribution network connecting assets but only a share of any necessary reinforcement of the upstream network. The remainder of reinforcement costs is socialised and recovered within GB network charges or paid for by subsequent connections. Furthermore, Ofgem is currently considering reducing or removing entirely any network reinforcement costs included in charges applied to customers connecting LCTs. It has been assessing whether current connection charging arrangements are continuing to work in the best interests of consumers – especially in light of increased investment needed as we electrify heat and transport. It has just published a consultation 'Access and Forward-looking Charges Significant Code Review: Consultation on Minded to Positions' ***(https://www.ofgem.gov.uk/sites/default/files/2021-06/%281%29%20Ofgem%20Access%20SCR%20-%20Consultation%20on%20Minded%20to%20Positions.pdf)*** which states;

'We think there are good arguments that the charging arrangements no longer provide an effective signal for network users and may actually slow down the roll-out of low carbon technologies across the energy system. We are therefore minded to change the connection charging arrangements. We propose reducing the contribution to reinforcement within the upfront connection charge for generation and removing it completely for demand. This comes at a cost, but we think this is the right balance between maximising benefits such as removing barriers (particularly for those where we think their ability to relocate in response to a connection charge signal is limited), and doing so at least cost to consumers generally'

This minded to position is indicating a further move towards shallower connection charges which could widen the gap in methodology with Northern Ireland if connection charge policy was to remain the same thus impacting further the competitiveness of Northern Ireland.

In RoI, a proportion of the cost of connection is socialised.

NIE Networks considers the connections model followed in GB or the RoI may be better suited for facilitating the journey to Net Zero and would advocate for an urgent review of and consultation on the connection policy and connection charging regulations in Northern Ireland to encourage the connection of LCTs.

DO MORE WITH LESS

Q23: Do you agree that an energy savings target should be set for Northern Ireland?

- Yes *(Y/N Answer required)*

Q24: Do you agree that Minimum Energy Efficiency Standards should be set to drive improvements in energy efficiency?

If so, what buildings should be the early priorities for introducing minimum standards?

Yes –

- **New Builds** – alignment with Future Homes standards in GB as a priority would by default meet a minimum efficiency standard;
- **Existing homes** – The Consultation outlines consideration for minimum standards being based on different tenure types. This question asks what building types should be early priorities. Building type considers the construction and age of the building, which has the dominant impact on the efficiency rating. Tenure more closely aligns with the building ownership, occupation and indeed responsibility to ensure any new minimum standard s achieved. It is also an indicator of ability to fund such improvements.
    - o Building type – It would more appropriate to consider energy performance rating improvements to a new min standard for a building type. This could either be by:
        - Setting a specific Energy Performance Certificate *(EPC)* rating per dwelling type based on age and construction or
        - Setting an improvement target e.g. say increase of 2 increments *(e.g. Band D to Band B or Band E to Band C)*;

- Tenure – the tenure of a property relates more specifically to identifying ownership and responsibility to carry our such improvement and to a degree ability to fund the improvements or seek appropriate financial support;
- Compliance – an important consideration when considering introduction of minimum standards is the timescale for compliance and penalties for non-compliance.

In terms of prioritising stock for early adoption and trial, NIE Networks considers that social housing such as Housing Executive and Housing Association housing should be prioritised as early adopters. This would provide early improvements for the most vulnerable and also provide vital information of the technologies and costs of energy efficiency measures.

Q25: Do you agree with the general scale and proposed pace of change outlined in DoF's five phase plan for building regulations?

If not, please outline what achievable timescale or programme should be implemented and your rationale for this.

Yes

The proposed five-phase plan looks a reasonable approach and is generally consistent with the GB approach in terms of phases and timelines – albeit being slightly behind GB. As such, it is possible to share learning between jurisdictions.

With this phased approach and the Future Homes Standard not due to be adopted until 2026/27 *(one year after GB)*, this needs to dovetail and be consistent, with consideration of banning fossil fuels in heating systems.

NIE Networks considers that Phase 1 interim uplift during 2021/22 should include for the provision of Electric Vehicle charging infrastructure in the home.

Q26: Do you think that we should seek to explore how the rates system can be used to encourage energy efficiency?

If yes, please outline key issues that would need to be considered.

Yes

Affordability is an issue for lower income homes. Whilst rates bills linked to energy efficiency of buildings rating *(EPC)* might incentivise those able to pay for energy efficiency improvements, they could be problematic for lower incomes homes with low EPC ratings. Also, paying more in rates reduces affordability of energy efficiency measures.

There is also a question on the trade-off costs and benefits – i.e. will it be attractive in terms of reduction in rates bill vs capital expenditure outlay for carrying out efficiency improvements, even when coupled with financial support options.

An additional consideration would be how long an investor would consider remaining at a specific property in terms of payback period for an energy efficiency investment. The consideration may also be of significant impact to businesses who may experience an increase to their rates valuation. However, any review to the rates systems should be designed to encourage energy efficiency and low carbon energy systems.

Q27: Do you agree that we should introduce a pilot domestic retrofit scheme by spring 2022, followed by a substantive scheme as part of a "one stop shop" approach?

If so, what changes are needed to the wider energy efficiency support landscape to ensure a joined-up approach?

Yes – This first of all requires a pilot scheme that focuses on being open to all domestic customers. This should be trialled with a view to then transitioning to the one stop shop *(OSS)* ownership.

Improving the energy and fabric efficiency of buildings is probably the most important step to take in reducing heat emissions. It is a low regret option and is effective whatever heating system is installed. Arup's modelling in its report commissioned by DfE *(Research into the Future of Energy Efficiency Policy in Northern Ireland)* indicates that a peak of retrofit measures for up to 30,000 buildings per annum is the minimum necessary to align with the UK's 2030 energy efficiency target. In order to align with 2050 net zero commitments, it is estimated that policies would need to drive an annual peak of retrofits for over 50,000 buildings within the next decade.

A significant funding programme is required to address this sizeable retrofit requirement for Northern Ireland, where 67% of homes are rated Energy Performance Certificate *(EPC)* Band D or worse. In RoI, the Sustainable Energy Authority of Ireland *(SEAI)* currently awards up to 35% grant funding *(50% for Housing Associations & 80% for Private Energy Poor)* under the National Home Retrofit Scheme to buildings that are not heat pump ready. ***https://www.seai.ie/grants/national-home-retrofit/***

In order for trials to be effective, there needs to be a well-designed and delivered stakeholder plan, with provision of information to the public on the range of measures and funding open to them – otherwise there is the risk of low uptake for the trials.

Social housing could be used as a test bed for trials for testing retrofit efficiency coupled with installation of low carbon heating systems. This would additionally stimulate the building retrofit and low carbon heating markets and supply chains, and commence the reskilling of resources required to deliver this programme.

Current NISEP schemes are generally targeted at lower income homes however NIE Networks believes the number and scope of these should be enhanced and open to all. Any future schemes should ultimately come under the remit of the proposed 'one stop shop' *(OSS)*.

Q28: Do you agree that we should ring-fence the PSO funding for vulnerable consumers including the fuel poor?

Please advise on changes you believe should be made to the level and scope of the PSO for energy efficiency.

Yes but qualified below.

NIE Networks agrees with the principle but not as it currently stands.

The Public Service Obligation *(PSO)* levy would initially seem an appropriate vehicle to deliver funding for the retrofit scheme, since all Northern Ireland households and businesses pay PSO charges within their electricity bills. However, the current structure of PSO charges poses an issue in terms of the fair cost recovery across consumers, as this will depend on the mix of energy sources used by the consumer. It raises the question of whether a PSO type levy should apply to other energy sources.

The PSO levy is charged to all electricity consumers based on the number of electricity units they use. As a consequence, consumers who use electricity to meet their heating, transport and general energy needs under current proposed arrangements will pay a disproportionate share to fund the retrofit scheme compared to consumers who use a high mix of energy sources *(e.g. gas and oil)*. As an alternative, by replacing the PSO charge based on electricity usage with fixed PSO charges per energy consumer *(all energy sources)*, similar to local council rates charges, this would facilitate a fairer funding mechanism, independent of the consumers choice of energy source. It should be separately identified and come out of the retail electricity or energy bill – provided the NIE Networks Landbank obligations presently included in the PSO levy were recovered.

Q29: Do you believe that green private finance solutions have a role to play in supporting domestic consumers to invest in energy efficiency?

If so, what specific green finance solutions should be explored?

Yes

The Committee on Climate Change report 'Reducing emissions in Northern Ireland *(Feb 2019)*' states that "Northern Ireland can support moves away from oil boilers and resistive electric heating through financial support for low-carbon alternatives in both residential and non-residential properties."

This (programme of low-carbon heating) could not be achieved without a policy framework to support low-carbon heat in residential properties. A financial support mechanism must be present for installers to overcome increased capital costs and conversion costs of installing low-carbon heating *(Table 4.2)*, accounting for any lifetime operational costs or savings:

- Financial support could be delivered in a variety of forms, including one that follows an RHI-style mechanism of fixed payments over time, up-front grants or loans to purchase equipment.
- The lack of up-front payment in an RHI-style mechanism makes it harder for householders without the ability to meet initial capital costs. Loans, grants, or assignment of rights mechanisms enable a greater proportion of the population to switch

In ROI, the Department of the Environment, Climate and Communications has established a 'Retrofit Taskforce' ***(https://www.gov.ie/en/publication/f2b3ee-retrofit-taskforce/#)*** to oversee the design and development of a new national retrofit delivery model/programme that will deliver 500,000 retrofits to BER B2/cost optimal or

carbon equivalent and 400,000 heat pump installations by 2030. It has still to report on its findings but one of its deliverables is to identify and make recommendations to government on relevant matters including:

- the appropriate entity to oversee the roll-out of the new model at the local level
- the optimal model*(s)* for the delivery of retrofits in Ireland
- the best way to transition from the multiple support schemes across different departments and agencies to the new model
- the best approaches to financing and funding the retrofit programme (including access to affordable finance when a property is transferred and sold as well as easy pay-back methods)
- the best approaches to supporting people on lower incomes to participate in the programme
- the approach to monitoring and evaluating the new integrated delivery system and financing system

In RoI, An Post is offering low rate loans for home energy upgrades from €5,000 – €75,000 over 10 years ***(https://www.anpost.com/Green-Hub/Home-Energy-Improvement-Loans)***

In our response to Q11, we outlined the importance of ensuring a just energy transition. We are all aware that this transition will require significant investment over the next 30 years but the most significant issue needing addressed is who pays. Striking the correct balance between Central Government, Local Government, private investment and customer funding whether directly or through energy charges will be vital to ensure that a) the transition is open to all and b) the more vulnerable and less able to participate are supported.

In this respect, it's all about ability to pay for energy efficiency measures such as retrofits and heating systems. A range of measures from government funded programmes for social housing, grants to lower income homes and private green finance such as tailored mortgages/loans for those more able to pay should form part of the solution. Ideally, private finance arrangements should be specifically designed to take account of the particular needs of the sector and who would avail of such product and services. For example, the term of a loan or mortgage might be an issue for people who may not plan to live at one location for the duration of that arrangement. Rather than settling the outstanding amount owed if they move house, could the outstanding loan be transferred to a new owner, for instance, so that this obligation remains with occupying owner of the property?

Householders deciding to retrofit their property could use either savings, an unsecured loan or a mortgage type product. In the case of the latter two options, the lending market is highly competitive and the cost of borrowing money has never been lower, therefore consumers could continue to use these products unless a specific green product was available at a materially discounted rate. If introduction of cheaper mortgages for more energy efficient homes by financial institutions would be welcomed.

NIE Networks supports the principle of having a wide range of private finance arrangements tailored for the range of low carbon energy investments that flow from the energy strategy.

Q30: Do you agree that Invest NI should deliver a pilot energy efficiency support scheme for businesses, to be followed by a substantive scheme delivered through the proposed "one stop shop" organisation.

If so, what type of support do you believe is most appropriate for different groups of business consumers?

Yes - Support for business is likely to be different than support for domestic. Investment decisions regarding energy efficiency will be considered alongside other business investments, sustainability commitments, Corporate Social Responsibility *(CSR)* agendas and each business specific funding models. A bespoke support programme tailored to different business and sectors seems appropriate and would cover:

- Information and advice on energy efficiency and transition options to zero carbon operations;
- Technical design services to move these feasibility options into fully costed and technically designed range of solutions;
- Financial assistance schemes and what options are open to business to fund programmes of energy efficiency.

Q31: Do you believe that green private finance solutions have a role to play in supporting non-domestic consumers to invest in energy efficiency?

If so, what specific green finance solutions should be explored?

Yes - businesses are likely to be able to access low/green finance products based on their financial strengths / securities etc. Having more funding options available to business gives more choice and would encourage more uptake to implement sustainability programmes tailored to their specific needs.

Businesses deciding to invest in energy efficiency measures could use either profits or borrowings to finance these. In the case of the latter, the lending market is highly competitive and the cost of borrowing money has never been lower, therefore business could continue to use these products unless a specific 'green finance' product was available at a materially discounted rate. If financial institutions introduce cheaper lending products for more energy efficient premises and operations then something like this would be welcomed.

Q32: Do you agree that we should seek to develop skills and capability, enhance quality assurance and standards, and use an accreditation body to provide guarantees on work undertaken by the energy services for retrofit sector?

If so, how can we help to prepare the sector for these changes?

Yes

With the scale of investment involved in a dwelling retrofit and the degree of potential disruption, it is important that occupiers have assurances that the works will deliver the desired outcomes and will be carried out to a high-quality standard. This is particularly the case with construction works associated with such a critical investment such as a home. Training, retraining and upskilling should be carried out by government supported and accredited schemes to provide such assurances.

In RoI, all contractors working on the National Home Retrofit Scheme must be a registered Better Energy Home *(BEH)* Contractor and the works completed align to BEH measures. Additionally, where PV installs are being included with the retrofit works, the installers must comply with the same standards as apply under the Sustainable Energy Authority of Ireland's *(SEAI's)* Solar Electricity Grant and works must be completed by a contractor on SEAI's Solar PV installer register. Domestic contractors must apply and fully comply with the Better Energy Homes Scheme Contractors Code of Practice, Quality Assurance Disciplinary Procedures *(QADP)*, Standards and Specification Guidelines for all measures covered under that scheme, including heat pumps. Installers of PV must comply with the SEAI Solar Electricity Grant requirements.

Consideration should be given to whether Building Regulations Standards should start to apply to a full retrofit or, alternatively, to developing a specific retrofit standard.

With likely uptake of Electric Vehicle chargers and electric heating, Northern Ireland should consider adopting an equivalent Building Regulations Part P – Electrical Safety.

Q33: Do you agree that information, awareness and behavioural change should be a key strand of future energy efficiency support?

If so, what are the key behaviours that should be targeted?

Yes

Energy efficiency is a key driver in multiple policies to reduce greenhouse gas emissions and is a vital strategy to reach Net Zero. One of the three key targets of the EU's 2030 Climate and Energy Framework is a 27% improvement in energy efficiency. It is also one of seven 2050 EU long term strategy building blocks.

In the document 'Powering a climate-neutral economy: An EU Strategy for Energy System Integration', energy efficiency is listed as the first of the three key strategies for energy system integration to provide low carbon, reliant and resource efficient energy as it reduces the overall investment required to achieve carbon neutrality. The other two main pillars of this strategy are electrification and the use of clean fuels.

Electricity use

One of the key factors affecting the efficiency of the electricity network is the time at which people consume electricity. The optimum usage of the electricity network is a flat profile of consumption across the day. By spreading electricity consumption across the day in this way, we can reduce the peak demands on the network which drive future network reinforcement and cost to customers. Since electricity losses increase exponentially with the flow of electrical current, peak demands will increase the total electrical losses, and consequently increase the energy needed to deliver the same total daily units of electricity to the consumers.

New market opportunities

Customers now have the opportunity to engage with low carbon technologies *(LCTs)* and emerging energy markets to more efficiently manage their energy needs. This will further evolve over time and NIE Networks

recognises that the needs of customers are wide ranging, with different customers seeking to engage with the network and markets in different ways. Some will become active participants in the new world and others will remain passive, relying on the network for meeting their electricity demands. Customers must be encouraged to engage with the energy markets through advice and information on options available to them and empowered to make the right decisions on how best to optimise their energy requirements. NIE Networks supports the formation of an independent advisory body to which we can contribute, to ensure relevant information is made available including how customers can avail of emerging flexibility services.

Better information on energy usage

Smart meters and the associated 'time of day' *(TOD)* tariffs can play a huge part in the behavioural change element of this. Modern, smart-ready technology is a key part of the drive to combat climate change. The information provided by smart meters will help customers to make more informed choices about their consumption, provide accurate and regular information on their energy usage, and ensure no more estimated bills. Smart meters are an essential foundation to maximise the benefit of renewable generation capability and LCTs, and offer customers information and choice such as availing of cheaper energy at off-peak periods. Smart meters have been rolled out successfully across many European countries but are currently not an option for Northern Ireland domestic customers, who have meters with more limited functionality. The introduction of smart meters would provide customers with the energy usage information they need to be more energy efficient and save money

Demand options - Heating and Transport

Two of the most significant areas of behavioural change will be on how we heat our homes and how we move around. Energy efficiency must be promoted through comprehensive independent advice and information education and advice programmes such as proposed by the 'One Stop Shop' *(OSS)*.

Heating our homes efficiently necessitates move away from the dominance of fossil fuels in Northern Ireland and adopting new technologies such as electric heat pumps and low carbon gas. There is much debate in Northern Ireland about the heating strategy and options for on and off gas grid customers. In an integrated energy system of the future, it is important that heating options are developed that present real alternatives to the Northern Ireland citizen backed up by impartial advice on important areas such as:

- New building design standards for Future Homes;
- Retrofit programmes covering a range of activities from design, funding and financial support mechanisms, delivery and project management options through to appointment of contractors and heating installers;
- Heating solutions covering heat pumps, hybrid systems, alternatives to oil and gas boilers as a transition;
- Financial support schemes – grants, loans, green finance options.

Similarly for transport, advice programmes are required to promote a move away from car journeys to more sustainable means and encourage a transition to low carbon modes of transport such as Electric Vehicles.

Independent body for provision of information

Customers will, in most instances, require access to fair, impartial and comprehensive advice and information to allow informed decision making. Energy is already a challenging area for domestic customers to understand even before adding the complexity that the energy transition will bring.

In Northern Ireland, advice and information for energy customer is provided by a range of different organisations, such as the Consumer Council for Northern Ireland, the Utility Regulator, the Northern Ireland Energy Advice Line, energy suppliers, energy networks, and government departments, each covering specific areas of expertise in aspects of energy markets and the energy transition. To help foster a future where energy customers can access the information they need more easily – especially in the context of the evolving role of the Distribution System Operator *(DSO)* and the enhanced ability of customers to participate actively in new electricity markets – we consider there is merit in NIE Networks contributing significantly to a centralised independent body for provision of information and advice to customers. As part of this service, we would use our expertise and understanding of the DSO function and the markets that it enables to provide impartial advice and information via this newly formed centralised information provider.

Support and protections for vulnerable customers is an area that requires greater consideration and collaboration to develop the idea further, including how best to create a coherent and coordinated programme that cuts across the various organisations that have responsibilities for the protection of vulnerable customers. The ultimate aim would be to develop a programme *(or series of programmes)* of support which increases participation among specific vulnerable customer groups. In this regard, NIE Networks is fully committed to playing its part in helping vulnerable customers with advice and information. NIE Networks launched its

Vulnerable Customer Strategy in June 2021 ***(https://www.nienetworks.co.uk/documents/customer-leaflets/vulnerable-customer-final)*** as it seeks to provide extra help and support for customers whose personal characteristics or circumstances reduce their ability to engage effectively and achieve fair outcomes.

Q34: What measures do you think can have the most impact on changing behaviors to change how we travel and reduce private vehicles?

- Development of greater public transport infrastructure, particularly to and through rural areas. There is a risk of creating a rural/urban discriminating divide where rural areas become penalised for using their private vehicle compared to those in urban areas, due to not have the necessary supporting public transport infrastructure or services;
- Promotion of working from home;
- Improved sustainable company policies in terms of:
  - reduced traveling for internal meetings;
  - travelling to external meetings, training, seminars etc.;
  - access to pooled electric vehicle *(EV)* transport;
- Reducing emissions impact through electrification of transport and decarbonisation of energy system; albeit not completely carbon free:
  - Promotion of schemes to transfer personal transport away from Internal Combustion Engines.
- Taxation through road tax, carbon tax on fuel etc will undoubtedly impact behaviour and transport choices however reasonable alternatives such as public transport options would require to be available.

REPLACING FOSSIL FUELS WITH INDIGENOUS RENEWABLES

Q35: Do you agree with setting a 70% renewable electricity target by 2030, whilst retaining the flexibility to increase this to 80%?

- Yes *(Y/N Answer required)*

Q36: Do you agree with the criteria identified that would allow in order to consider any future increases in the renewable electricity target?

In order to reach a 70% Renewable target by 2030, certain actions are required as follows:

- There has been considerable progress to date to achieve the 49.2% consumption from renewables *(by Dec 2020)* as a result of the network facilitating connection of 1684MW of renewable generation *(1280MW onshore wind)* with a further 343MW committed to connect in the pipeline.
- However, consideration needs to be given to the following critical enablers:
  - Little latent capacity left in electricity network, making it more difficult to move from 40% to 70% than what was required to achieve 40%. Infrastructure build will be significant, but this has become more protracted from a planning and legalities perspective; therefore:
    - More proactive infrastructure build is required;
    - Planning reform is required to ensure planning statutory targets and performance against these targets are in line with GB and Ireland timescales
    - Effort on better utilising existing infrastructure is required, to include:
      - Cluster substation consultation;
  - In relation to over-installation (the concept whereby an existing generation site installs generation capacity that exceeds the contracted maximum export capacity *(MEC)*, there is currently a limitation of 20% beyond MEC to the additional MW that may be installed at an individual site. NIE Networks recognises that the current “over-install rule” introduced

by SONI and NIE Networks via a consultative process is not sustainable in light of the proposed increased Renewable Energy Sources – Electricity *(RES-E)* targets. In order to meet the 70% target, the existing infrastructure must be utilised to maximum efficiency. Timing of a further increase to 80% would be critical, since this could result in deliverability issues and unnecessary additional infrastructure;

- The impact of the load needs to be considered as this increases due to transport and heat.

- Technology mix and location – ensuring that return on investment is maximised. Delivery through small scale, uncontrollable generation will be more difficult *(increased losses also)*;
  - Grid development needs must be locational and consideration should be given to incentivising connection of demand and generation in locations which will have maximum benefits for the network and customers.
  - Reliance on small scale will not meet targets.
  - Significant development to the transmission network is required. Changes required to the approval process currently in place for NIE Networks and SONI to bring forward transmission projects *(D5 mechanism)*. The Utility Regulator *(UR)* should engage NIE Networks and SONI to develop a more efficient process in light of the increased volume of transmission projects required to facilitate the energy transition.

Consideration of future increases in the renewable target:

a) Projects can be delivered in a cost-effective manner. - Yes - a review is required on the cost of connection to the network

b) Offshore wind can be delivered by 2030. No – requires commitments and policy movement immediately or this is unlikely to be achievable in the near term *(see response to Q38)*
   - Crown Estate leasing – there is no date as yet for the next round of leasing but there is a 2-year process *(as per Round 4)* followed by a project lifecycle to being operational of circa 10 years
   - grid reinforcement – timely assessment and delivery of grid support
   - planning reform – attainment of necessary planning
   - investor confidence – attraction of developers, appropriate reward structure
   - stakeholder/community engagement
   - resourcing and skills – availability

c) Storage technologies can minimise system curtailment of renewables. – Yes. In addition to storage connections, additional demand connections in the right areas could also impact system curtailment

d) Greater clarity on electricity demand for heating and transport. – Yes. there is a need to ensure it is possible to asses these demand separately however NIE Networks reinforce the distribution network to accommodate both of these demands

e) Consumers' bills are not disproportionately impacted. Yes. Reference response to Q22. NIE Networks' 'Networks for Net Zero' Strategy outlines a high-level assessment of the impact on use of system costs taking account of increased investment requirements to 2030 *(£140m on the distribution network and £750m on the transmission network)* and also the anticipated increase in electricity consumption and people move away from fossil fuels for heating and transport (12% increase by 2025 and 19% increase by 2030). NIE Networks modelling estimates, assuming no other changes to pricing structure, that by 2025 and 2030, the charge to domestic customers relating to network costs would result in a 1% reduction in the overall cost they pay per unit of electricity consumed.

Other key considerations for achieving future renewables targets include the following

a) Smart metering roll out significantly underway. *(Ref also to response to Q73)*

b) Tariff reform enabling 'time of use' *(ToU)* and potentially locational tariffs. *(Refer also to response to Q22)*

c) Planning reform. *(Refer also to responses to Q4,13,14)*

d) Efficiency of the current D5 approval process for major transmission projects

e) Adoption of a more proactive investment strategy. *(Refer also to response to Q13)*

f) Connections framework; legislation, licence and process /policy

Q37: Do you agree that we should explore with BEIS the possibility of extending the Contracts for Difference scheme to Northern Ireland?

If so, what terms would be needed to ensure generation in the region whilst protecting consumers?

Yes but qualified below.

GB has introduced Contracts for Difference *(CfD)* for generation above 5MW and the RoI has a Renewable Electricity Support Scheme *(RESS)* to bring forward investment. The proposal to extend the GB CfD scheme to Northern Ireland should be encouraged, however this may need to be adjusted to reflect local conditions in Northern Ireland.

Renewable projects in Northern Ireland face a number of competitive disadvantages compared with projects in GB, including:

- Longer planning timelines – e.g. typically a wind farm in Northern Ireland spends 852 days in planning compared with 378 days in GB.
- High levels of dispatch down – e.g. in 2020 wind farms were turned down 15% of the time.
- Smaller turbines - e.g. recent developments in GB have tended to use larger turbines which are more efficient
- Higher grid connection costs – e.g. Northern Ireland connection costs are unsocialised unlike GB and RoI. The competitive nature of the CfD auction incentivises the developer to bid at the lowest effective price. A developer will take account of all costs, including grid connection costs, and the level of risk when submitting bids.

The GB scheme would closely align with UK energy policy and in this respect Northern Ireland's contribution to the Net Zero ambition by 2050, but it does not reflect the SEM conditions that exist in Northern Ireland. The Renewable Electricity Support Scheme *(RESS)* in Ireland is more closely aligned to the market conditions that prevail in Northern Ireland albeit there are different legislative arrangements on the island. There would be an opportunity to consider the benefits of both the CfD scheme and the RESS scheme to consider whether a bespoke arrangement might be more applicable to Northern Ireland. Particular consideration should be given to the appropriate arrangements for small scale renewables. A review of connections charging policy should also be considered, as reduced connection costs for developers would led to lower bid prices, resulting in long term savings for customers.

Implementation timelines for any incentive scheme should be a key consideration. It is possible that an incentive scheme introduced later into the 2020's could result in a rush for connection in the later years of the energy strategy timelines. This would put pressure on the relevant approval and delivery bodies i.e. planning authority and NIE Networks.

Q38: Do you believe it is possible that an offshore wind project in Northern Ireland could be operational before 2030?

If so, please outline what targeted actions could be taken to deliver this.

No – rationale outlined below

Possibly the most significant challenge in terms of delivery of offshore wind by 2030 is the significant timeline for the upfront portion of the offshore project lifecycle. Developing an offshore wind farm in UK waters, from initial concept through to commercial operation, can take up to ten years. In their document 'Information Memorandum – Introducing Offshore Wind Leasing Round 4' ***(https://www.thecrownestate.co.uk/media/3321/tce-r4-information-memorandum.pdf)***, the Crown Estate has outlined a typical project lifecycle based on historic GB timelines.

- Leasing and Plan-Level Habitats Regulation Assessment *(HRA)*: **Estimated 1-2 years**
  - Enter Wind Farm Agreement for Lease *(AfL)* - Wind farm AfL is signed at the end of the leasing process following Plan-Level HRA approval
- Development and Consenting: **Estimated 5 years**
  - Enter Transmission AfL - Transmission AfL is signed prior to the Development Consent Order application, following identification of the cable route and approval by The Crown Estate
  - Development Consent Orders granted - Developers are responsible for obtaining all necessary consents in relation to their project
- Procurement and Contracts for Difference *(CfD)*: **Estimated 2 years**

- Enter Wind Farm Lease - Option is exercised and the wind farm lease is entered following the award of consent
- Enter Transmission Lease - Option is exercised and the Transmission Lease is entered following consent *(expected to be at the same time as the wind farm lease)*

- Construction: **Estimated 3 years**
  - Assign Transmission Lease to Offshore Transmission Owner *(OFTO)* - Transmission Lease is assigned to the appointed OFTO

So even before construction, the Agreement for Lease stage could take up to 10 years.

At present the Crown Estate Round 4 lease process is in progress which is the Crown Estate first leasing round in nearly a decade – offering the opportunity for at least 7 GW of new offshore wind projects to be developed in the waters around England and Wales. Significantly Northern Ireland waters are not included in the current Round 4. At present the projects are undertaking the HRA stage. In order to qualify for a Leasing Round, two pre-requisites need to be in place:

1. Policy Frameworks are required such as a Contracts for Difference scheme or similar and OFTO arrangements. At present the arrangements for a Northern Ireland CfD scheme form part of the DfE's Energy Strategy Consultation.
2. Market Appetite – there needs to be developer interest to participate in a Leasing Round

At present there is also no indication from Crown Estate as to exactly when the next leasing Round might occur however with the cost of offshore renewables decreasing and given the challenging renewables targets, it can be reasonably assumed there will be future rounds.

A significant additional challenge for Northern Ireland is that we have not delivered offshore wind farms before so the indicative timelines as outlined by Crown Estate for GB have not been previously tested in Northern Ireland. We do know however that in terms of planning timelines for major projects, NIs targets are in excess of those in GB and we are not even meeting these targets. *(ref to planning response)*.

Other considerations are:

- location - point of connection requires to be agreed – this determines who owns the sea cable and ultimately funds its installation.
- grid development needs (linked to location). It is imperative that there should be a clear policy on the approach to offshore development for Northern Ireland. This would permit all relevant parties to plan accordingly to ensure necessary infrastructure is delivered as efficiently as possible. It is important that a more proactive approach to network development can be accommodated and the current D5 approval process for major transmission projects with the Utility Regulator is made more efficient to ensure timely approval of associated network reinforcement projects.
- investors / developers need to be attracted to this project with the right market conditions - links to previous question on incentives being in place at an appropriate time.
- how the customer / stakeholder / community engagement and environmental studies would be progressed successfully.
- resourcing and skills mix accommodated – Northern Ireland hasn't delivered this before. Likely to be competing for resources with offshore developments being progressed in other parts of the UK in the same challenging timeframes.

Q39*: Do you believe that a fixed platform offshore wind project should be targeted to be part of the renewable generation mix?

If so, how would you propose some of the challenges associated could be overcome?

NIE Networks would adopt a neutral approach regarding whether an offshore wind installation is fixed platform or floating. The key determinant would be what could be delivered at least cost to the Northern Ireland customer in the most appropriate timescale which may be post 2030.

Floating platforms are likely to have a higher capacity factor due to being located further offshore. The further a windfarm is located away from the coast present additional costs associated with the connection to the onshore grid. As such the key consideration when considering costs is the net output costs in terms of cost per MWhr delivered and not just the capital cost of the project.

See also response to Q38.

Q40: Do you believe that floating platform offshore wind offers the best long-term opportunities for offshore wind in Northern Ireland's waters?

Y/N - Yes

Probably as this widens the scope of location but could increase project costs.

Whilst both technologies will represent similar challenges to the electricity network, consideration should be given to the following when deciding on technology type:

- Best chance of deliverability in 2030 e.g. likely that floating will face less opposition due to it being potentially located further from shore;
- Floating technology is less developed than onshore – a lower Technology Readiness Level *(TRL)* – ensuring that the technology is mature enough to have a high degree of confidence around it;
- Levelised cost of both technologies;
- Point of connection and early collaboration with both NIE Networks and SONI in terms of the network connection and any grid reinforcements required to facilitate the connection in a timely manner.

Q41: Do you believe that other marine renewables can play a key role in our renewable generation mix?

If so, please identify what technologies offer the greatest potential and what steps can be taken to support these.

Yes

Northern Ireland should keep its options open should other marine technology be proven technically and economically. It should leverage the innovation already conducted in this space with regard to tidal e.g. Seagen and other tidal schemes that were included in the Crown Estate leasing rounds for the North Coast. Due to the relative immaturity of tidal technology and lack of widespread uptake around UK and RoI, it would not be envisaged that tidal would play a significant role in Northern Ireland's generation mix.

Q42: Do you agree that a strategic approach to planning the location of renewable projects should be taken?

If so, please outline practical steps that could be taken to deliver this.

Yes:

Northern Ireland has had huge success in surpassing the RES target for 2020 of 40% with 49.2%V of consumption from renewable sources *(12 months to Dec 2020)*. Since the publication of the SEF 2010-2020, the volume of renewable generation grew from approximately 450MW to 1700 MW, with 77% of this generation being from onshore wind. Surpassing the 40% target in 2020 ahead of time has required a significant collaborative effort from across industry and the community *(including the Ulster Farmers Union and its members)*. Delivery against the new target proposed of minimum 70% by 2030 will require almost a doubling of current renewable generation capacity. Whilst reaching the current levels of renewable consumption was facilitated by utilising and maximising the current distribution and transmission networks with minimal new construction, the period to 2030 and beyond will require significant network build and reinforcement. We have outlined the costs in our Network for Net Zero strategy report. Areas of policy and practical steps that need considered to achieve a new target are :

- Planning reform is required;
- Lowest cost/ lowest infrastructure solution should be adopted;
- Continued evolution of the successful existing cluster methodology;
- Capacity Map – keeping capacity map current and available to all
- Cluster substation consultation – connecting demand into clusters;
- SONI consultation 'Shaping Our Future Network' and strategy for grid development
    - co-existence of generation and demand;
    - deliverability - low impact on grid investment means targets more achievable.

Q43: Do you believe that there should be a requirement for renewable developers to share some of the financial benefits of developments with local communities?

If so, what share do you think would be reasonable? If not, please provide your rationale.

Yes –

- Community backing for renewable projects is important if renewable targets are to be met. At present, some developers are making contributions to community schemes / projects on a voluntary basis. Some form of a more formalised requirement may ensure a degree of consistency of approach and greater community buy in, but may run the risk of putting off some potential developers. The Committee on Climate Change report 'Reducing emissions in Northern Ireland *(Feb 2019)*' states "The Republic of Ireland has used a more formal approach to ensuring local communities benefit from low-carbon generation projects. Any renewables scheme bidding for funding under the Renewable Electricity Support Scheme *(RESS)* will need to meet pre-qualification criteria that include offering the local community an opportunity to invest in and take partial ownership of renewable projects. In parallel with RESS scheme in the Republic of Ireland, Northern Ireland should ensure that any renewable support mechanism includes community support. This could be on a voluntary basis if clear guidelines for 'good practice' are provided by the Northern Irish government and accepted by developers"
- NIE Networks considers that benefits to the community should not be purely financial, but these projects need to deliver 'sustainable social value' to the communities in which they are developed. Social value incorporates more than direct financial contributions to communities and encompasses themes such as:
    a. attractiveness of area for inward investment:
    b. increase in local employment and associated knock-on local economic benefits e.g. positive impact on fuel poverty:
    c. improved health through reduced air and water pollution:
    d. access to new electricity markets:
    e. improved network resilience and security of supply.
- By way of an example, The Government in Scotland has published guidelines for a good practice approach to community benefit from onshore wind developments. ***(https://www.gov.scot/publications/scottish-government-good-practice-principles-community-benefits-onshore-renewable-energy-developments/pages/3/)***. The onshore wind sector has been at the forefront in terms of offering community benefits, but the Scottish Government would encourage all renewable generation developments, irrespective of technology and scale to adopt the guidance. Community benefits area voluntary initiatives that offer an opportunity for communities to benefit from their local renewable energy resource by engaging them in discussions to build a lasting relationship with the renewables industry. The package of benefits that a renewable energy business offers may vary in line with the priorities of community/communities involved, and the size and scope of the renewable energy project. However, community benefits should relate to the specific needs and aspirations of local people. The benefits equate to approx. £5000 per MW installed per year and the community benefits package is not linked to the planning process.

Q44: Do you agree with taking separate approaches to on-gas grid and off-gas grid consumers?

If not, what approach should be taken?

Yes qualified below

The Committee on Climate Change report 'Reducing emissions in Northern Ireland *(Feb 2019)*' outlines the challenges and potential strategies for heating solutions specific to Northern Ireland. The report recognises the specific challenges, with 68% of homes dependent on oil for heating and the lower development and reach of the natural gas network.

Figure 4.7 of the report proposed low-regret measures that distinguish possible approaches for on and off gas grid dwellings. It goes on to state that "heat pumps are the leading low-carbon option for buildings not connected to the gas grid. Together with new-build properties, installation of heat pump in buildings off the gas grid can help create the scale needed for supply chains to develop, potentially in advance of accelerated heat pump roll-out in on-gas grid properties after 2030." The policy options section refers to "provide support for 'low-regret' heat technology in the early 2020s" with a "potential for a large expansion of 'low-regret' low-carbon heating due to the high proportion of households off the gas grid that are currently fitted with oil boilers".

On gas grid premises have particular measures that can be taken as interim steps to decarbonisation that aren't available to off gas grid- such as *(i)* switching from oil to gas, *(ii)* injection of gas network with low carbon gas *(biomethane/ H2)*.

Off gas grid premises have a different (more limited) range of options such as low carbon liquid fuels and heat pumps. This could lead to consideration of a more attractive or targeted building retrofit programme to off gas grid customers either by way of financial support or by targeted information programmes.

In the longer term, however, as heat pumps become more embedded through deployment in new builds and off gas grid, there should be less of a distinction between on and off gas grid, with customers on gas grid having a wider range of options potentially including adopting electrification options. On gas grid customers may consider that electric heating will provide more optimum solutions to meet their heating needs – particularly if they are active customers who have adopted other electric or carbon technologies such as solar PV, electric vehicles, domestic battery storage. Where customers have the ability to generate and/or store electricity, electric heating via heat pumps would be an obvious consideration in order to use their electricity sources optimally to reduce their overall energy bills.

Q45: Do you agree that we should not rule out potential low and zero carbon heat solutions at this stage?

If not, please outline your rationale.

Yes

- The basis of future heating systems must be founded on the principal of energy efficiency first i.e. energy efficiency must be the primary consideration in terms of an underlying policy towards using less energy and moving to zero carbon heating systems. ;
- Decarbonisation of heating is one of the most complex areas for Northern Ireland, given its over reliance on imported fossil fuels and the low grade of existing housing stock. Low carbon heating solutions are constantly evolving technically both here in UK, RoI and further afield;
- Northern Ireland should have the fullest range of zero carbon heating options available but must be cost effective, technically robust and safe.
    - Oil – Biofuels – ref Q54 , the oil industry should outline a credible pathway as to how solutions based on biofuels can be achieved that are economic at scale and consistent with a net zero strategy;
    - Gas / Biomethane / Hydrogen - ref Q51 , the gas industry should outline a credible pathway as to how solutions based on low and zero carbon gas can be achieved that are economically, technically and safely robust at scale and consistent with a net zero strategy together with any interim strategy;
    - Heat pumps / hybrids – the technology on modern heat pumps is advanced and it has been proven in many jurisdictions with more challenging climatic conditions that they work efficiently. However, it is understood that the correct building fabric is required and deployment across Northern Ireland will be dependent on an integrated strategy with energy efficient measures such as Building Regulations reform and retrofit programmes. Trials should be supported to prove the most economic solutions;
    - Geothermal and district heating systems – more research is required into opportunities in this space

Q46: Please outline below what low and zero carbon heat solutions you believe we should prioritise for trials?

Please outline where such trials should be focused. What key issues should be tested within each trial?

Heat pump and hybrid heat pumps - Trials are not required to prove the technology of heat pumps alone as the technology is relatively mature. It has been proven worldwide that heat pumps work in the right conditions. Northern Ireland trails should therefore be focused on:

- Hybrid heat pump systems *(heat pumps with either oil/ gas or H2)*. Hybrids have the potentially to provide interim measures minimising initial retrofit costs;
- Providing the optimum integrated solutions for various housing types and construction with different ranges of thermal efficiencies i.e. the right balance of retrofit measures, heat pump or hybrid heat pump installation.

Blended gas and H2 – The Committee on Climate Change 6th carbon budget report suggests that blended gas and hydrogen can play a part in the overall solution, but that the 2020s should be a period of trial for these technologies. The trials should prove or otherwise the extent to which low and zero carbon gas can blend with the existing gas network and ultimately replace natural *(and blended)* gas. It is planned in Northern Ireland to commence trials of biomethane gas injection. This should be progressed to determine the extent to which blended gas can act potentially as an interim step. In due course trials may be required for hydrogen.

Q47: Do you believe that the role of heat pumps will be different depending on whether consumers are on or off the gas grid?

Please outline what you think the specific roles should be.

Yes to a degree

- Initially, heat pumps are likely to be the solution for a) new builds for both on and off gas grid consumers and b) off gas grid consumers where there are limited alternative low carbon heating options;
- They will also become real options for all customers *(on or off gas grid)* who choose to be more active in terms of energy management, whereby their electrical heating demand along with other electrical demands such as Electric Vehicles and appliances can be managed on site utilising self-generation such as turbines, solar PV and battery storage;
- Hybrid system – Hybrid systems may be a method whereby building retrofit and energy efficiency costs could be minimised by the adoption of heat pumps alongside either oil/ gas *(or blended)* and hydrogen heating systems. These trials hold be supported to determine if there is any specific consideration to serve on or off gas grid customers.

There is a need to progress now with this low regret solution reflecting the current state of knowledge and the fact heat pumps will be part of the overall solution.

Q48: Do you agree that Northern Ireland should develop a pilot grant scheme to support low carbon heat technologies for domestic and small non-domestic consumers?

If so, please identify key issues that need to be considered in designing and delivering such a scheme.

Yes

Pilot grant schemes are essential to kick start a change in behaviour and adoption of new technologies.

Key consideration in development of such schemes include:

a) type of housing: age, construction, design standard and performance of insulation and air tightness

b) tenure of housing: social, owner occupied or rented;

c) Provision of independent advice and information – one stop shop *(OSS)* or similar;

d) Access to design and construction services through recommended / approved installers;

e) Grants / finance appropriate to customer groups - range of financial products from grants to loans / mortgages.

NIE Networks would encourage the use of trials and support schemes to determine their appropriateness from a technical and economic perspective for Northern Ireland.

Q49: Do you agree that legislative and regulatory steps should be taken to facilitate biomethane injection into the gas network?

If "yes", do you believe that a support scheme should be put in place to incentivise green gas production?

- Yes *(Y/N Answer required)*
- No *(Y/N Answer required)* but qualified below

Support schemes need to be deigned to ensure that they do not adversely favour one technology over another. It depends on the level of incentive for green gas production versus the demand for that green gas and its ultimate end use.

In the case of hydrogen, green H2 relies of using renewable electricity for hydrolysis to produce hydrogen.

Proposals to use curtailed wind may not prove economic.

In the case of biomethane or biogas, the use of Anaerobic Digestion *(AD)* plants may actually divert existing plant away from supplying electricity as part of a renewable portfolio to making green gas. A holistic approach should be taken to ensure any green gas production is considered alongside its potential end use

Q50: Do you believe that support should be provided to encourage biomethane production for injection into the gas network?

If not, please outline what alternative approach should be taken to decarbonising the gas network.

Yes, but qualified below

- To a degree however any level of support needs to be balanced against other carbon reduction measures and technologies such as heat pumps and hybrid heating systems.
- Support schemes should not incentivise one technology over another.
- An issue also arises if Anaerobic Digestion *(AD)* plants are subsidised more favourably to produce biomethane for gas grid injection over producing renewable electricity - this could result in present AD plants diverting away from renewable electricity production and adversely impacting on the mix of technologies and renewable electricity targets
- Pathway for decarbonising the gas network – The gas industry should be required to outline a plan for gas network decarbonisation including any interim steps.

Q51: Do you agree that the local Gas Network Operators should develop and publish a plan to decarbonise gas out to 2050?

If so, what key issues must be considered within it?

Yes

It is clear that natural gas is not the fuel of the future. However, as an interim step, it makes sense for customers to change from oil to gas boilers where there is a gas network already outside their premises. Any future expansion of the gas network however requires to be compatible in meeting Northern Ireland's and the UK's long-term climate goals. NIE Networks considers that further development of the gas network mains supplies in Northern Ireland may not be in customers best interests and should be viewed with caution until the longer-term decarbonisation strategy for gas has been financially and technically assessed in full. Further expansion of the gas network at this time is *(a)* not compatible with Net Zero absent a long-term economic case, *(b)* is contrary to a generally accepted strategy throughout Europe and indeed emerging in the UK of electrification and *(c)* could result in potential unnecessary investment in a second energy network.

As such, a road map for decarbonisation of the existing gas grid is urgently required. The roadmap must address the following:

- Technical issues relating to the network itself - its capability to carry low/ zero carbon fuel;
- What additional infrastructure is required to transition from natural gas to zero carbon gas including all interim measures such as injection;
- A transitional plan showing on a street-by-street basis / town-by-town what is involved with appropriate timeframes;
- Safety issues associated with hydrogen;
- The total cost of the transition including capital costs, storage and transport costs and ongoing operational costs – for both the interim transition and the final transition to zero carbon fuels;
- How the network will be supplied either from indigenous green/blue hydrogen or imported;
- The total cost of H2 production. including the plans and costs for any carbon abatement required;
- The implications for customers - appliance changeouts and associated costs;
- A comprehensive stakeholder engagement analysis on customers' willingness to adopt H2 into their homes when other alternatives are available to them.

Q52 *(new)* Do you believe that on-gas grid consumers should have the option to retain oil boilers for use with biofuels?

If yes, outline rationale. If no, suggest viable timeline for introducing a ban on oil boilers for on grid customers?

No - but qualified below

- Oil and gas are not consistent with zero carbon fuels and need to be removed at some point;
- Oil boilers should be banned in any new home from 2025 *(as in GB*);
- The oil industry is being asked in this consultation *(Q54)* to outline a pathway to net zero involving biofuels. The credibility of this pathway should inform the decision on the end date for oil boilers on or off gas grid.

Q53: Do you believe that off-gas grid consumers should have the option to retain oil boilers for use with biofuels?

If not, what is a viable timeline for introducing a ban on the use of all oil boilers for off grid consumers?

No but qualified below

- For existing dwellings and given the high current reliance on oil for heating in Northern Ireland, there is a need to consider an appropriate future end date for use of oil boilers especially off gas grid;
- This end date needs to be consistent with viable alternatives being made available and, as yet, it is probably too early to consider what that end date is;
- Oil is not consistent with zero carbon fuels and need to be removed at some point;
- Oil boilers should be banned in any new home from 2025 *(as in GB)*;
- The oil industry is being asked in this consultation *(Q54)* to outline a pathway to net zero involving biofuels. The credibility of this pathway should inform the decision on the end date for oil boilers;
- It should be a desire to set a date but kept open in the framework.

Q54: Do you agree that the local Oil Industry should develop and publish a plan on how biofuels could play a role in decarbonising heat out to 2050?

If so, what key issues must be considered within it?

Yes

A reduction in CO2 emissions from heating, will be impossible without addressing the widespread use of oil. The use of kerosene for heating must be severely reduced, if not entirely eliminated, if Northern Ireland is to progress to net zero emissions by 2050. Public engagement and acceptance will be a major challenge of moving away from kerosene'

It is important to understand if biofuels e.g. Hydrogenated Vegetable Oils *(HVO)* can be an economic and zero carbon option for Northern Ireland and in particular for home off gas grid. The plan should be a comprehensive assessment including :

- Technical and economic assessment for production and supply in Northern Ireland
- Ability or otherwise to bled with kerosene as an interim step
- Ability or otherwise to be used solely as an alternative
- Its decarbonisation credentials in terms of GHG emissions form use
- Assessment of end use costs *(without subsidy)*
- Any reliance on imports of biofuels

Q55*: Do you believe that support should be introduced to promote the uptake of biomass for off-grid consumers?

If so, please advise on what support is needed and where it should be focused.

- Whilst this might be an option for off gas grid, any support scheme *(information, advice, funding)* for adoption of low/zero carbon alternatives should not be technology specific nor should it distinguish between on / off gas grid customers. It should be open to all.

Q56: Do you agree that the sale of coal and wet wood should be banned in Northern Ireland?

If so, do you believe this should be extended to include other solid fuels with the exception of kiln dried wood?

- No response proposed

Q57: Do you agree that we should develop a Northern Ireland specific strategy that sets an overarching, long-term plan for cleaner, greener transport and shows how we will meet net zero emissions within the transport sector?

If so, what Northern Ireland specific issues need to be factored into this in order to accelerate the uptake of Zero Emissions Vehicles?

Yes

NIE Networks has advocated that an Electric Vehicle *(EV)* Taskforce needs established as soon as practical and could be a subgroup of the exiting Energy Strategy Transport WG. This would be a Northern Ireland Cross-Departmental Government EV Taskforce with representatives from key industry stakeholders such as Motor Distributors, Infrastructure providers and a representative of the Northern Ireland Local Authorities *(similar to the 'Plugged in Places' Programme)* to explore how best to set and move forward with Northern Ireland's EV ambitions including charging infrastructure. This should ideally be convened by the Department for Infrastructure and involve the Department for the Economy

- Northern Ireland has its own specific needs brought about from:
    1. a more distributed and higher percentage of rural population than much of the UK;
    2. a much greater reliance on personal vehicles due to a limited public transport infrastructure;
    3. a smaller market due to population size creating commercial hurdles that are less of an issue in other areas of GB with much higher volumes of vehicles on the roads;
    4. Electricity connection chargers in Northern Ireland being 100% chargeable to the connecting customer – presenting financial hurdles which differs to the rest of the UK;
    5. Northern Ireland having its own Utility Regulator which has a different mandate to Ofgem limiting its capability to include decarbonisation drivers when considering final determinations of infrastructure investment allowances.
    6. No specific rollout or programme for smart metering which is a key enabler for low carbon technologies *(LCT)* uptake and planning the network capacity ahead of need.

- While an Northern Ireland specific overarching strategy does need to be co-ordinated and reflect different measures necessary to meet net zero emission targets, such as reducing travel or promoting active transport, appreciation on the delivery timelines for the more challenging segments such as the electrification of transport needs to be prioritised – in particular the development of a robust and fit for purpose public EV charging infrastructure and also the impact on the electricity network. To do so, the strategy must ensure steps are taken to assist with implementing the necessary measures that provide the network capability and system processes to promote and facilitate the uptake of EV's in Northern Ireland. Examples of such measures that should be factored into the strategy are:
    1. A widespread Smart Meter rollout that provides the real time visibility of the network allowing the introduction of Smart solutions that can help mitigate the network impact of the expected rapid uptake in EV charging. Having the right smart meters in place provide the platform for expediting targeted smart solutions which will help prevent the network becoming a blocker to the electrification of transport and creating opportunities to defer more traditional network reinforcement which can take long timelines to deliver;
    2. Changes to NIE Networks Statement of Connection Charges. Connection customers in Northern Ireland pay 1005 of the cost of their connection including for works to the voltage level above their connection point. This results in high costs and becomes a deterrent to private investment. Noting again that all applications received by NIE Networks to date for EV charging infrastructure have been abandoned due to high connection costs;
    3. Considerations for Tariff reform to allow more flexible tariffs targeted at EV charging primarily towards domestic but also commercial customers;
    4. Permitting proactive network investment rather than the current reactive approach, which will inevitably become a blocker to EV charging on the network;

5. Early formation of the proposed EV taskforce to initiate the process of identifying ultra-fast EV charging hubs to allow the required network construction and reinforcement to begin as such works can have prolonged delivery timelines. Linking this to NIE Networks Capacity Map may provide some assistance in identifying potential areas that has adequate capacity already available;

6. Support for proposed changes to NIE Networks connection design criteria for residential developments. These changes are being proposed to include the capacity headroom required to provide supply to EV charging and other low carbon technologies even where they are not being requested by the developer;

7. Recognising the potential for a greater utilisation of renewable cluster infrastructure proposed under NIE Networks consultation seeking to connect demand into these sites.

Q58: Do you agree that an EV communication campaign should be run in Northern Ireland?

If so, what key messages would be most impactful for consumers as part of this?

Yes

This campaign scope should be set by the Electric Vehicle *(EV)* Taskforce but would envisage including information on vehicle option and costs, charging infrastructure and plans to develop i.e. the strategy, home charging options, destination charging etc.

The future electrification of transport will affect all vehicle owners and an effective communication campaign is necessary to address a range of aspects. The scope of the campaign should be set by the proposed EV Taskforce, since it will be best placed to capture the issues that need tackled. The key messages for consumers are:

1. The importance of notifying NIE Networks of the installation of EV Charger and highlighting this is not about billing the customers for the installation, as the existing installation will be typically capable of supplying the charger. Rather, it is about the impact and solutions needed as a result of this additional load on the network from increasing volumes of EV's charging simultaneously allowing NIE Networks to efficiently invest.;

2. Draw out potential network solutions that will need to be instigated to manage the uptake of EV's charging on the network including forms of managed EV charging where the rate of charge is balanced against the availability capacity. This control of the charging will be managed automatically without the need of any input from the customer;

3. Educate future EV customers around the various types of charging *(ultra rapid, destination, on street)* and draw attention to studies that conclude the most common EV charging location is at the home which mitigates the public charging infrastructure need for those with off street parking.

Q59: Do you agree that the private sector and local government have a key role to play in developing EV infrastructure?

If so, what barriers can government address to ensure that such projects are commercially viable?

Yes

To date, it has already been proven that the private sector alone will not deliver a suitable large-scale electric vehicle *(EV)* charging infrastructure in Northern Ireland. The existing infrastructure has not been developed in any material way since the conclusion of the Plugged in Places scheme in 2013. This is primarily as a result of the very limited EV market in Northern Ireland and low numbers of EV's on the roads, presenting a 'chicken and egg barrier' where the lack of infrastructure is seen as a deterrent to those considering moving to an EV, and the lack of EV's on the road deters EV charging operators investing in the market place. Governmental intervention is a vital ingredient to overcome the barriers currently preventing the development of such projects being commercially viable with a number of possible options being:

1. Issuing a derogation on the EU Electricity Directive preventing NIE Networks from owning and operating a public EV charging infrastructure. This would enable NIE Networks to develop the EV Charging network in the near to mid-term until such times as the market matured to a point where the commercial model supported its continued operation and growth, at which point NIE Networks would divest of the assets;

2. As part of the overarching strategy identify funding models for prospective charge point operators;

3. Also, as discussed in the response to Q57, putting in place a revision of NIE Networks Statement of

Connection Charges *(SoCC)* which would reduce the initial high costs associated with connections;

4. As part of any revision of NIE Networks SoCC, consider scalable solutions where the initial connection includes capacity allowing for the EV charging capability of the site to increase in line with growing numbers of EVs on the road;
5. Planning reform that prioritises infrastructure projects particularly those necessitated to deliver projects that are contributing to meeting emission targets.

Q60: Do you agree that we should develop an EV Charging Infrastructure Plan in collaboration with public and private partners?

If so, what should the key priorities of the plan be?

Yes - through the EV taskforce. Priorities:

- strategy to include locations, quantity of chargers, size of chargers.
- reference the Wales strategy approach *(covers home, public, destination, rapid)*

As discussed in the response to Q57, the EV Taskforce being proposed under the Northern Ireland Energy Strategy should be responsible for developing an EV Charging Infrastructure Plan for Northern Ireland which includes exploring and commissioning parties that have the capability to deliver the roll out of the infrastructure across Northern Ireland.

This plan will need to include both public and private partners to deliver the infrastructure at pace. The plan needs to prioritise a joint up approach which considers all types of EV charging and the type of consumer this will serve. Ensuring no discrimination between different communities i.e. rural and urban. The infrastructure plan should also consider home charging capabilities which will change the requirements of consumers to areas with limited home charging capabilities.

Q61: Do you agree that public sector contracts can be a key driver for developing technologies and markets for alternative fuel vehicles?

If so, what specific opportunities are there that could be progressed?

Yes - due to size and variety of transport types in fleet.

Public sector contracts could be used as a key driver for developing technologies and markets for alternative fuel vehicles due to the variety of transport types within their fleet. This includes the rail networks which currently operates on diesel and needs to consider electrification, or other alternative fuel technologies. These contracts can be spec'd in such a way to only permit those offering alternative fuelled vehicles to bid, and in doing so stimulate the R&D and commercial markets necessary to allow such services to function.

Q62: Do you agree that collaborative research will be important to demonstrate alternative fuels?

If so, what are the best routes to identify and progress potential projects?

No response proposed

Q63: Do you believe that Compressed Natural Gas/Liquid Natural Gas and/or and synthetic fuels can play a role as an interim measure to decarbonising transport?

If so, how can government help to encourage the private sector to trial and use these fuels?

No response proposed

Q64*: Do you believe that CCUS can play a role in Northern Ireland?

If so, what potential applications could be the initial focus for demonstration projects?

The potential for Carbon Capture, Usage and Storage *(CCUS)* in Northern Ireland is based on available sites with appropriate geology. Given that CCUS is intended to be provided on a UK basis *(Committee on Climate Change)*, it should only be explored in Northern Ireland if it is the most economic option within the UK context/ plan.

Q65: Do you believe that our approach to petroleum licensing should change in line with our commitment to decarbonise energy?

No response proposed

CREATE A FLEXIBLE AND INTEGRATED ENERGY SYSTEM

Q66: Do you agree that the Electricity Network and System Operators should produce a pathway to creating a flexible and integrated energy system?

If so, please provide evidence to demonstrate what the priorities of such a plan be?

Yes

NIE Networks work collaboratively with SONI on a regular basis as we jointly develop and deliver investments on the Transmission network in Northern Ireland. The challenges ahead with the projected decarbonisation of power, heat and transport will present significant challenges and need for investment in both the transmission and distribution networks.

In July 2019, the Department for the Economy together with the Utility Regulator formed a Joint Working Group between NIE Networks and SONI with the objective to co-ordinate the development and sharing of energy policy inputs and producing a joint document which sets out a common Roadmap for a sustainable and decarbonised electricity system enabling a low carbon future for Northern Ireland. This roadmap was intended to be a key input to the Department for the Economy energy strategy and policy process.

In addition, both NIE Networks and SONI have been engaged with the Department for the Economy thematic working Groups with NIE Networks being represented on 4 out of the 5 WGs *(Power, Heat, Transport and Customer).*

NIE Networks is committed to continue to provide whatever support and expertise into the process is required and also continue to work with SONI to ensure plans for the transmission and distribution network are coordinated along a common vision of the future and within the parameters of a new Strategic Energy Framework.

NIE Networks and SONI have developed a number of reports and analysis which, together, present a coordinated view of the decarbonisation pathways in an integrated energy system. In discussions with DfE, it has been agreed that NIE Networks and SONI will jointly produce a sign-posting document post June 2021 which will outline this combined approach and strategy.

Key elements of this which will be described are:

Joint work:

- NIE Networks / SONI - Insight Paper: ***'Energy Scenarios to Inform Developing Energy Strategy in Northern Ireland'*** - A joint paper by NIE Networks and SONI describing scenario processes and insights gained in order to inform the DfE energy strategy process – submitted to DfE 10 December 2020
- TSO / DSO joint Workplan - close collaboration, the TSO and DSO can implement solutions that deliver optimal outcomes for Northern Ireland's electricity consumers whilst meeting respective license obligations. By taking a partnership approach, solutions to common problems can be identified and resolved in a coordinated fashion. To help achieve this the TSO-DSO Working Group has been established.
- FLEX Tech programme - In July 2020 the "FlexTech Response to Consultation" ***(https://www.soni.ltd.uk/media/documents/FlexTech-Response-to-consultation.pdf)*** was published which sets out a Flexible Technology Integration Initiative. The goals of which are to deliver on our ambition of 70% renewables by 2030 and a pathway to net zero carbon emissions by 2050, by working in a collaborative and dynamic manner with industry, NIE Networks, ESB Networks, regulators in both Northern Ireland and Ireland as well as other key stakeholders
- TIA planning, development, operation and connections panels - Monthly meetings are held between the representatives of NIE Networks and SONI for each panel. These panels provide a funnel for managing new projects from conception through design, construction and commissioning with a handover to the relevant panel as the project progresses.

NIE Networks:

- ***'Networks for Net Zero'*** – Delivering a sustainable energy system for all – April 2021. This strategy report was launched on 22 April 2021 and sets out our considered views on the options and pathways for decarbonisation in Northern Ireland and how electrification can play a significant role in a flexible and integrated decarbonised energy system. It has customers at the core and assesses how customers will have increased opportunities for managing their energy demands more efficiently through adoption of new technologies and will have the ability to engage with new energy markets. The report presents independent modelling that has been undertaken to examine the potential pathways to decarbonisation and presents inputs from academia who are engaged with studies and trials into many aspects of the low carbon transition. It sets out how NIE Networks can facilitate increased renewables on the network, how it can enable an increasing uptake of low carbon technologies such as electric vehicles, solar photovoltaics, electric heat pumps, and how it will support new technologies such as hydrogen electrolysis and battery storage, as well as the development and operation of new services and markets. It further sets out how the role of NIE Networks as an organisation will change as a result - a journey to being a 'Distribution System Operator' that we have already commenced
- ***'Greater access to the distribution network'*** – call for evidence, consultation and recommendations paper
- ***'Vulnerable Customer Strategy'*** – was launched on 9th June 2021 as outlines how we plan to improve our service to vulnerable customers over the next three years
- ***'Green Recovery'*** – NIE Networks presented a paper to the Economy Committee entitled ' Green recovery – Opportunities to accelerate a green recovery in the context of a developing energy strategy for Northern Ireland'. It outlines areas in which we are confident that swift action will maximise the economic opportunities for Northern Ireland as we manage our way through the COVID-19 pandemic, alongside progressing towards net-zero ambitions. We outline eight tangible areas of opportunity to support the economy by unlocking investment in low carbon infrastructure and fast-tracking decarbonisation of heat and transport.

SONI:

- ***'Tomorrows Energy Scenarios 2020' - 2020'*** - SONI have recently completed Tomorrow's Energy Scenario Northern Ireland ***(https://www.soni.ltd.uk/newsroom/press-releases/tesni-2020/)***, which provided several pathways to a net-zero energy system. The scenarios created as part of this process were heavily influenced via input from stakeholders following an extensive consultation. The scenarios are analysed and the published results indicate opportunities for flexible technology on the transmission system
- ***'All Island Generation Capacity Statement'*** - SONI annually publish the All Island Generation Capacity Statement ***(https://www.eirgridgroup.com/site-files/library/EirGrid/All-Island-Generation-Capacity-Statement-2020-2029.pdf)***. In this statement, we outline the expected electricity demand and the level of generation capacity that will be required on the island of Ireland over the next ten years. As part of the strategy to support sustainability and decarbonisation, the grid is undergoing a process of modernisation, with greater needs for flexible generation to ensure security of supply. We are working to ensure that everyone has electricity when they need it, at the most economic price possible while preparing the grid to provide at least 70% of our power from renewable sources by 2030.
- ***Transmission Forecast Statement*** - SONI publish the annual Transmission Forecast Statement, highlighting opportunities for new generation and demand.
- ***'Transmission Ten-year Development Plan'*** - The Transmission Development Plan Northern Ireland *(TDPNI)* is the blueprint for the development of the transmission network and interconnection over the next ten years. The ten-year plan presents projects that are expected to meet the operational needs of the transmission network and any future needs that may drive future potential projects.
- ***'Transmission Needs Assessment'*** - The System Needs Assessment *(SNA)* highlights the needs of the Northern Ireland transmission system when assessed with the three scenarios developed as part of the TESNI 2020 process. This allows grid development needs arising on the transmission network into the medium and longer term to be identified, forming part of the input to SONI's grid development process.
- ***'Shaping Our Electricity Future consultation'*** - Shaping Our Electricity Future, ***(https://consult.soni.ltd.uk/consultation/public-consultation-shaping-our-electricity-future)*** an ongoing extensive

consultation involving government, industry, stakeholders and the public, allows everybody to have their say on how the transmission system should be developed to meet anticipated clean energy targets. Following the conclusion of this process, a final roadmap will be published on how the transmission should be developed over the next decade. Shaping Our Electricity Future also consults on changes to the market required to ensure clean energy targets can be met. DS3 System Services arrangements, introduced in the last decade have provided a route to market for new flexible technologies in a number of ways. Shaping Our Electricity Future consults on what is required to ensure the system can be operated with very high levels of renewables whilst maintaining a reliable electricity supply.

Q67: Do you agree that centralised conventional power generation can play an important role in the pathway to decarbonised energy?

If so, what opportunities and barriers exist for such plants?

Yes

Wind energy *(onshore and offshore)* will be the main contributor to decarbonisation in Northern Ireland, but reliability and stability of electricity supply requires conventional generation to play a necessary role including providing energy, system services and flexibility. Options to decarbonise conventional generation with alternatives to fossil fuels needs to be examined now to ensure appropriate net zero complaint decisions and investment are taken in a timely manner.

Conventional plant will have a lesser but still important role to play. It is required for the times intermittent renewables are not sufficient to meet demand and for network stability reasons. Security of supply is paramount.

We need to ensure that market and incentive arrangements do not make it financially impossible for these plants to exist and be economically viable. We do not want to be in a position where out of market contracts are required to secure security of supply.

Q68: Do you believe that further interconnection will be needed in the future?

If so, is a new revenue mechanism needed to bring forward this investment?

Yes *(require delivery of N/S Interconnector)*

Delivery of the second North South Interconnector will be a key enabler for the integration of additional renewable generation, addressing constraints on the transmission network, improving security of supply and allowing the grid to operate more effectively as part of an all-island Single Electricity Market (SEM Additional interconnection would need to be assessed on its own merits.

Northern Ireland currently has interconnection with the RoI and Scotland. The interconnection with the Irish transmission system enables the power system to be operated on an all-island basis. The Greenlink Interconnector between RoI and Wales and the development of the Celtic interconnector between France and RoI *(due to energise in 2026)* will provide market participants greater access to the wider European market, helping to suppress wholesale electricity prices, reducing renewable electricity constraints and enhancing security of supply. For Northern Ireland customers to benefit from the increasing levels of interconnection into Ireland, it is essential that the second North South Interconnector is constructed and commissioned.

This investment is of strategic importance to Northern Ireland and in addition to the benefits set out above will support economic growth in Northern Ireland and will facilitate the connection of more renewable generation to the network.

The project is needed because at present although the electricity transmission network operates on an all-island basis, there is currently only one 275kV interconnector linking North and South. This restricts the amount of electricity that can flow between the two networks.

The North South Interconnector is necessary to ensure ambitious renewable targets can be met, through the relaxation of some operational constraints and efficient operation of the SEM. There is a significant amount of energy from renewable generation that is subject to dispatch down. This energy could be utilised if other technologies, including interconnection were in place as these would strengthen the electricity network. It is extremely unlikely Northern Ireland can meet a 70% renewable target without the N/S Interconnector given the operational constraints that require to be resolved by its operation however this would require further analysis from the TSO to confirm.

NIE Networks' understanding is that the TSO modelling would indicate no other interconnectors are assumed required for Northern Ireland to meet a 70% target aside the N/S Interconnector.

Q69: Do you agree that our power system should be based around flexible solutions to align demand and supply?

If so, please advise on what key decisions are needed to achieve this.

Yes

- The importance of bringing demand side solutions along with renewable deployment will be critical to achieving targets in a more flexible and dynamic system.
    - Commencing a strategy of electrification of heat and transport sectors now will shift energy use from fossil fuels to electricity and this increased electricity demand, through correct policy signals, can be used in a more efficient manner to utilise the network more optimally and positively contribute to the renewable consumption targets;
    - Co-locating new demand close to renewable generation has the effect of ensuring energy is consumed close to the point of production, improving efficiency and impacting renewable utilisation targets;
    - The value of customer demand side assets cannot be underestimated. A mindset and policy change is required to treat demand side assets and actions equally with supply side assets and generation actions. Technology, data, digitalisation and markets must interact to deliver sustainable solutions.
- Flexibility and smart solutions will facilitate /defer conventional investment in some instances but delivery of new infrastructure, at scale is critical. Flexibility will have an important role to play in the short term but conventional reinforcement is also required.
- NIE Networks recently issued the first ever Flexibility tender. This tender offers customers opportunities to support their local distribution networks by being flexible with their electricity consumption or generation, earning revenues in return. There has been a very substantial response to the call for expression of interest
- Customers, or aggregators operating on their behalf, will be scheduled or signalled to flex their assets so that NIE Networks can analyse the response and network impact in Flexibility Trial Zones *(FTZs)*. The FTZs in this tender are distributed across Northern Ireland covering 15% of all customers. If the trial is successful, Flexibility could be used to manage emerging network congestion in future regulatory periods. To enable further development of such techniques, digitalisation of current electricity meters and a review of tariff structure is required.
- In GB 1166MW of Flexibility services was contracted in 2020. We need to ensure incentives and infrastructure are available to grow the market in Northern Ireland.
- Flexibility down to domestic level is critical for LCT connections facilitating the electrification of heat and transport. Smart meters are a key enabler to the domestic flexibility market.
- The current connections charging methodology in Northern Ireland is out of step with the rest of the UK and ROI, resulting in investment being redirected into markets with cheaper connection costs. A review of current charging methodology is required to facilitate the connections of more generation and demand in order to grow the flexibility market.

Q70: Do you believe that the SEM and DS3 offer sufficient market routes to support the deployment of flexible technologies for generators of all sizes?

If not, please provide evidence to demonstrate what additional market routes may be needed.

No.

- Whilst the DS3 market has been important in enabling Northern Ireland to achieve the 40% RES-E target by 2020, more consideration should be given to congestion management from distribution connected to facilitate the delivery to targets;
- Local FLEX market*(s)* will be more critical going forward as we transition to the decarbonisation of heat and transport. Domestic flexibility markets will be key to help reduce reinforcement and facilitate low carbon technology *(LCT)* connections. Smart meters and tariff reform are necessary to enable the domestic flexibility market, to give NIE Networks and customers visibility of network requirements. GB DNOs contracted a total of 1166MW of flexibility in 2020 and this figure is project to grow each year. The market must now be given the correct infrastructure and investment to grow in Northern Ireland in order to achieve 70% RES-E by 2030;
- Whilst smart and market-based solutions such as Flex provide clear benefits to the network

and customers, these solutions are short term and won't solve all network constraints therefore conventional network reinforcement is still required in the long term; Increased innovation required in this space going forward.

- The DS3 market should consider the whole system impact, including the impact on the distribution network such as capacity issues to accommodate DS3 services. It's important the distribution network doesn't become a blocker to customers offering system services, therefore sufficient investment must be allowed for.
- Customers should have the ability to stack DS3 services and distribution Flexibility services.
- Consideration should also be given for the ability of existing network assets to offer services as well as third party consumers, where it can be demonstrated to be in the customers best interest. Through the 'Greater Access to the Distribution Network in Northern Ireland' consultation, customers were asking if NIE Networks should utilise existing assets to provide cost effective services to the TSO. At least 50% of respondents believed NIE Networks should provide services in some form, with Last Call provider marginally the favoured option.

Consideration should be given to existing connection volumes and whether there's sufficient revenue opportunities to drive volumes going forward.

Q71: Do you agree that a policy framework should be put in place to enhance access to and use of consumer data?

If so, please outline key considerations that need to be factored into this framework.

Yes

- DNO notification of low carbon technology *(LCT)* should be a pre-requisite for the receipt of any financial incentive. If we don't know about where they're connected, then we can't invest in the right areas of the network;
- Role of smart meters is critical to the network operators. Significant use case for DNO getting access to smart meter data – efficiencies, etc. Research is underway with NIE Networks smart meter trial of 1000 meters which will help quantify the benefit of smart meter data. *(Ref also response to Q73 smart meters);*
- There's significant benefit in the additional network data that smart metering can provide. Customer anonymity is paramount - NIE Networks are not concerned with customer specific information, but the associated network data *(Volts and Amps)* is where the value is. Access to this data is necessary if efficiencies are to be leveraged for the benefit of all customers.
- Demand is expected to almost double, however demand shifting techniques such as pre-heating in buildings, storage availability, smart vehicle charging and decision making informed by smart metering are expected to provide flexibility and ensure optimisation of infrastructure reinforcement;
- Tarif reforms and smart metering key enabler for domestic flexibility, peer to peer trading, vehicle to grid.

Q72: Do you believe that we should take forward the Energy Data Taskforce recommendations in Northern Ireland?

If so, please advise on key differences with Great Britain that need to be factored in.

Yes

NIE Networks is broadly supportive of the Energy Data Taskforce *(EDTF)* recommendations being made applicable in Northern Ireland.

NIE Networks is already part of the Energy Networks Association *(ENA)* Data & Digitalisation Steering Group, which has been set up along with GB electricity and gas network companies to implement the recommendations of the EDTF. NIE Networks is using this as an opportunity to understand and work with GB DNOs as they implement the EDTF recommendations.

NIE Networks is already working on the development of a digitalisation strategy and our new IT Strategy is centralised on streamlining, consolidating and integrating our data with a view to it being made more open and easier to use in the future.

NIE Networks will have a key role to play as custodian of the electricity network data and as an Operator of Essential Services *(OES)*, however there will be issues to be addressed around data security, network security

and data privacy. It will be expected that Data Protection and NIS Compliance will be incorporated into all aspects of any implementation. Security by design is a core element of any approach. The issues around cyber resilience, given a more open approach to sharing of data, are complex and as such Ofgem have set up a number of working groups under its ED2 framework looking at future incentives for GB electricity distribution network companies including one which will look at possible incentives around cyber resilience[1].

Whilst we agree the EDTF recommendations should at some point be made applicable in Northern Ireland, it is important that we first understand the challenges, complications and resource requirements of doing this in GB. Northern Ireland should be a 'fast follower' and take on board the learning from our GB counterparts. To implement the recommendations in Northern Ireland would require licence and/or legislative changes where customers have not given consent to disclose information. As is normal practice, as legislation and licence changes take place in GB, these then become transposed into Northern Ireland versions to reflect the differing network and market set up.

In addition, if the EDTF recommendations were to be made applicable in Northern Ireland, it is important to appreciate that there will be investment in systems required to facilitate this and equally there will be a lead time to implement this. As part of Ofgem's consultation into the RIIO-ED2 framework, its decision paper outlined concerns that were raised by GB DNOs around funding arrangements for cyber and physical security[2]. In addition whilst there was endorsement for the recommendations of the EDTF, a number of the DNOs commented specifically on the size of the challenge and the associated investment needed to deliver recommendations[3].

It will be important to understand and investigate who the primary users of the data will be and what they will be using it for. Concerns around this were raised by one of the GB DNOs in Ofgem's consultation for RIIO_ED2 Framework highlighting the value of investment required to enable desired data gathering and sharing when the ultimate purpose and use may be unclear[4].

It will take time to achieve this but a proper understanding will allow efforts to be focussed where they are most required first. This is already being explored in GB and a series of Stakeholder Events which NIE Networks are actively involved in are being organised by the ENA[5] to better engage with stakeholders on their requirements.

Additionally, any implementation of recommendations should be across all utilities/sectors in order to provide the desired benefits to customers of consistency of approach and a unified infrastructure map so customers do not need to check multiple sources.

Q73: (a) Do you agree that a Cost Benefit Analysis of smart meters should consider the broader benefits they can bring to consumers as an enabler of energy data and a smart system?

(b) If the CBA for smart meters is not positive, please outline what alternative approaches can be taken to deliver these benefits for consumers?

(a) Yes, it is important in any Cost Benefit Analysis *(CBA)* to consider the broader consumer benefits that can be less directly obtained via the network benefits arising from smart metering customer point data. We have previously referred to this in our smart metering case outlined in our Green Recovery submission.

There are significant benefits for the electricity network when smart meters are integrated into smart distribution systems. Such dynamic systems can better incorporate heat pumps, EVs and other green technologies into the network alongside distributed generation, for example by intelligent phasing of their operating times to better balance supply and demand. Smart metering data used in this way therefore not only helps consumers to accurately manage their usage and allows them to benefit through enhanced retail arrangements with electricity suppliers, but also provides utilities with better information *(including outage and power quality data)* which will act as a key enabler to future smart-cities and communities.

Any smart metering CBA should therefore consider both the customer tariff benefits *(including those distribution network influenced tariffs yet to be fully developed by the retail and/or wholesale Markets, for example specific EV or heat pump tariffs and import / export energy trading arrangements)* and also the benefits obtained through a detailed understanding of HV and LV network conditions which will ultimately support more accurate modelling and forecasting. This will in turn lead to better informed network investment decisions *(including new supply connection costs)* and efficient network operation

[1] https://www.ofgem.gov.uk/publications-and-updates/riio-ed2-working-groups

[2] https://www.ofgem.gov.uk/system/files/docs/2019/12/riio-ed2_framework_decision_dec_2019.pdf page 25

[3] https://www.ofgem.gov.uk/system/files/docs/2019/12/riio-ed2_framework_decision_dec_2019.pdf page 59

[4] https://www.ofgem.gov.uk/system/files/docs/2019/12/riio-ed2_framework_decision_dec_2019.pdf page 59

[5] https://www.energynetworks.org/info/modernising-energy-data.html

to the benefit of customers and in line with NIE Networks transition from DNO to DSO. In addition, the CBA should also consider the broader Market benefits to consumers and suppliers such as reduced meter reading, enhanced prepayment, debt management, remote disconnection and electricity theft prevention and detection.

(b) The benefits of smart metering are both tangible and non-tangible and may only fully materialise or be realised over several years. Given this, the benefits of smart metering in any CBA must be considered using other metrics in addition to financial e.g. contribution to Government net zero targets, role in the transition to a green economy, a catalyst in the decrease in fossil fuel consumption etc. It will be important therefore to carefully define what constitutes a non-positive CBA.

Should a conclusion be reached that a CBA for smart metering is negative after considering the above, it is difficult to envisage an alternative means of obtaining the customer benefits. This is fundamentally due to the fact that the energy disruptors and influencers *(e.g. microgeneration, batteries and EVs)* will be in or at close proximity to the customer premise and therefore require measurement and control at that point. It would be possible to gather dynamic energy data deeper into the distribution network e.g. at local substations, however the resulting loss of granularity would drastically reduce the value of the data in interpreting customer energy activities. In addition, having set up the data systems, communications and processes necessary to obtain substation level data, it is a relatively small commercial and technical step to have taken this to a position within the customers premises in the first place.

Q74: Do you believe that financial support should be provided for micro-generation to increase the number of active consumers in Northern Ireland?

If so, what should this support look like? If not, what are the alternatives?

Yes

It is important that we encourage active participation in the energy markets and facilitate uptake in microgeneration, but we need to ensure the right policy measures in terms of financial support work in practice. It is not necessarily about having subsidies for smaller-scale projects but ensuring that potential investors and communities have equal access and participate in projects.

If financial support is provided for micro-generation, a pre-requisite to receiving this incentive should be to notify the DNO of the connection to ensure effective and efficient network investment.

When comparing UK network operator Electric Vehicle *(EV)* notification numbers with Office for Low Emission Vehicles *(OLEV)* Electric Vehicle Home Charge Scheme numbers, one particular analysis showed that Network Operators are receiving as little as 3% of the number of notifications that OLEV receives, despite this being a requirement in order to receive the OLEV grant. Not receiving these notifications means we are unable to map the increased network load associated with the rollout of low carbon technologies *(LCTs)* which can overload and damage existing infrastructure. It also leads to inaccurate network modelling and ineffective asset replacement programmes – the cost of which is passed onto Northern Ireland consumers. It is essential that NIE Networks is notified of micro-generation connections to ensure the secure and efficient operation of the network. Note that when considering the overall financial impact of micro-generation, the cost associated with reinforcing the LV distribution network should be considered.

Any incentive schemes introduced should be done so with the aim of enabling the connection of generation/ new technologies that will materially contribute towards the achievement of the Energy Strategy targets in a cost-effective manner.

Q75: Do you agree that network charging in a decentralised energy system will need to change?

If so, what are the principles that should be adopted in distributing future network costs across consumers?

Yes

Network Charges: Network charging should be reviewed to ensure a fair cost recovery for all and to ensure passive and vulnerable consumers do not pay a disproportionate amount of the network costs as the use of the network changes to facilitate new low carbon technologies *(LCTs)* and decentralised energy systems. This charging review should be a holistic review of all network charges; distribution, transmission and connection charges – to ensure a consistent message about where to connect and how to use the network to the benefit of the fuller consumer population.

As the network becomes decentralised we should review the proportion of network costs that are recovered

from fixed charges as opposed to volume-based charges (consumption) to ensure fair cost recovery. Also, how much decentralised customers should pay for the benefit of top-up and standby services.

Connection Charging

The current charging mechanism is deterring domestic customers who are "early adopters" of LCTs and may deter many domestic customers from adopting LCTs in the future. This is a particular problem in Northern Ireland since, unlike GB and RoI where a portion of the charge is socialised, the connection charging policy requires the full distribution connection charge, including network reinforcement, to be levied directly on the connecting customer.

By contrast in GB, customers pay upfront for new distribution network connecting assets but only a share of any necessary reinforcement of the upstream network. The remainder of reinforcement costs is socialised and recovered within GB network charges or is paid for by subsequent connections. Furthermore, Ofgem is currently considering reducing or removing entirely any network reinforcement costs included in charges applied to customers connecting LCTs. It has been assessing whether current connection charging arrangements are continuing to work in the best interests of consumers – especially in light of increased investment needed as we electrify heat and transport. It has just published a consultation 'Access and Forward-looking Charges Significant Code Review: Consultation on Minded to Positions' which states;

'We think there are good arguments that the charging arrangements no longer provide an effective signal for network users and may actually slow down the roll-out of low carbon technologies across the energy system. We are therefore minded to change the connection charging arrangements. We propose reducing the contribution to reinforcement within the upfront connection charge for generation and removing it completely for demand. This comes at a cost, but we think this is the right balance between maximising benefits such as removing barriers (particularly for those where we think their ability to relocate in response to a connection charge signal is limited), and doing so at least cost to consumers generally'

This minded to position is indicating a further move towards shallower connection charges which could widen the gap in methodology with Northern Ireland if connection charge policy was to remain the same thus impacting further the competitiveness of Northern Ireland.

The current charging mechanism is deterring domestic customers who are "early adopters" of LCTs and may deter many domestic customers from adopting low carbon technologies in the future and indeed can deter inward investment through Northern Ireland being uncompetitive with neighbouring jurisdictions. Evidence this is currently taking place through the abandonment of all connection applications received by NIE Networks to date regarding electric vehicle *(EV)* charging infrastructure. NIE Networks considers the connections charging model followed in GB or the RoI may be better suited for facilitating the journey to Net Zero and would advocate for an urgent review of and consultation on the connection policy and connection charging regulations in Northern Ireland to encourage the connection of LCTs.

As an example, a leading UK food producer, based in Northern Ireland, employing over 300 staff and exporting internationally, submitted an application to NIE Networks for an increase in capacity and was quoted c. £1.5m. Over 90% of this cost was driven by system reinforcement costs and the company concluded the cost of and availability of connection capacity as a major barrier to development.

Connection policy:

NIE Networks has updated its generation connection policies, taking effect from 2020. These changes will help to remove barriers to domestic energy storage, facilitate further connections of micro-generation and will significantly reduce the connection times of such schemes.

It is also NIE Networks' desire to provide customers with options on how they connect to the network and to utilise innovation to connect customers in what is a heavily congested network. Flexible connections is one such approach, where a generator is permitted to connect when otherwise no connection would be available, on the basis that the generator's export to the grid is not unrestricted but managed according to the real time capacity of the network.

NIE Networks works closely with SONI and the industry when developing connection policy through the Connections Innovation Working Group *(CIWG)*. NIE Networks and SONI however are limited in connection policy development by the legislation and licence conditions they must comply with. In order to develop an enduring connections policy for Northern Ireland that provides a clear and transparent framework for investment, a review of the relevant legislation and licence conditions is urgently needed.

Q76: Do you believe that a new regulatory framework is needed to protect consumers who engage in decentralised arrangements?

If so, what consumer protection measures should be part of this?

Yes

Active customers should be provided with a regulatory framework that provides them with confidence that new market arrangements are clearly defined and operated in a fair and consistent manner; and that if issues were to arise, that they have the right to raise concerns and seek appropriate redress.

Such measures might include:-

Market Arrangements ***(for third party intermediary services)***

- A design framework for these new market services with defined procedures, roles and responsibilities; along with appropriate governance arrangements;
- A licensing or accreditation process to ensure that providers of third-party intermediary services have the necessary systems and resources to operate in accordance with defined market arrangements;
- A defined relationship between these new service arrangements and existing established regulatory arrangements such as the SEM and electricity retail market arrangements, and the role and responsibilities of the Utility Regulator.

Customer Redress Arrangements

- A customer standards framework, including code of conduct and defined service standards;
- A complaints process, including redress procedures and oversight body.

It will be important to establish such a regulatory framework at the outset, providing encouragement and confidence to those customers who, as 'early adopters', are considering early participation in decentralised arrangements and who will be necessary to create sufficient momentum to establish more widespread customer engagement.

Q77: Do you believe that energy communities have a role to play as part of the energy transition? If so, what support is needed to progress these?

If not, what are the alternatives?

Yes,

- This is a requirement under the Electricity Directive. Developing a policy framework and putting in place the right support mechanisms leaves this option open if economically advantages for communities to consider
- NIE Networks' role is to provide a connection to all energy projects, whether they are community-driven, large-scale, private or public. Our role is to make sure that we have an electricity network that can cater for all demand;
- NIE Networks supports community energy projects and welcomes the significant role they can play in the market. In RoI and in GB, community projects play a much greater role than they do here because they are incentivised through local council supports;
- In RoI, there is provision for communities potentially to take an ownership stake in wind projects in their region or to have some stake in the project;
- There is a role for community projects in overall decarbonisation, but, ultimately, to really make the difference required, large scale projects are required;
- Flexibility in the distribution network will be critical to enable to energy transition. NIE Networks recently published the first ever Flexibility tender in Northern Ireland. This tender offers customers opportunities to support their local distribution networks by being flexible with their electricity consumption or generation, earning revenues in return. Within this first flexibility tender, NIE Networks welcomed expressions of interest from all technology types and size, including aggregators and community energy schemes. The FLEX project will create the financial stimulus to encourage community energy schemes to propagate in Northern Ireland. Flexibility down to domestic level is critical for low carbon technology connections, facilitating the electrification of heat and transport. The roll out of smart meters, tariff reform and development of the telecommunication and IT infrastructure are necessary for a liquid flexibility market in Northern Ireland;

- In RP7 we intend, subject to approval for associated cost recovery, to publish increased network data to allow customers and community energy schemes to develop.

Q78: Do you agree that the potential of geothermal energy should be further explored, supported by a legislative and regulatory framework?

If so, what applications do you believe there are for geothermal energy in Northern Ireland?

Yes

Northern Ireland would appear not to have obvious sources of geothermal energy but the Geological Survey of Northern Ireland *(GSNI)* has indicated Northern Ireland does have some geological formations which could be a source of energy. Before any commercial development could happen in Northern Ireland with geothermal energy, the potential needs to be verified. As such it would be appropriate for some limited funding to be made available for feasibility studies and trial bore hole investigations to assess the potential.

Q79: Do you agree that further trials of heat networks should be carried out?

If so, what key issues do you think should be tested through these?

Yes

- Local heat networks are reasonably underdeveloped in Northern Ireland with only 94 networks *(notified to BEIS)* and 54 of these supply residential dwellings. Only 1 supplies more than 100 dwellings. Traditionally these are powered by fossil fuels but as fossil fuels need to be replaced with low to zero carbon alternatives, there is an opportunity to explore how this might be achieved using renewable sources *(Geothermal, biomass, industrial waste heat, solar thermal)*
- Geothermal – *(see also response to Q78)*. Geothermal potential may be limited in Northern Ireland – there is only one major geothermal network in GB and Ireland has none
- Biomass – Biomass boilers can be used to heat water in a heat network but does produce harmful emissions with fuel sources of wood chips or pellets. Organic household and agricultural waste can be used in AD plant to produce biogas which can be used as a fuel to heat water so may have an application in small rural networks. There are some examples in GB *(10% of heat networks use biogas, the rest natural gas)* and a few examples in ROI.
- Waste Heat – Waste heat extracted through a heat exchanger to heat water is possible from hot flue gases, industrial cooling water, sewage treatment plants, power generation air conditioning and refrigeration etc. As such it is important to consider the longevity of the sources of this heat before considering investment in a heat network. There are limited examples in GB and none in Ireland
- In GB, there are financial support mechanisms for heat networks with a new Green Heat Network Fund expected next year for England and Wales. Heat networks are encouraged in other neighbouring jurisdictions and in Europe. As heat networks have not substantially impacted in Northern Ireland it could be assessed that to date they haven't been economically viable, however it would be appropriate for Northern Ireland to provide some limited financial support to perform feasibility studies and limited trials to assess potential in Northern Ireland.


Northern Ireland
Electricity
Networks
www.nienetworks.co.uk