Energy Strategy for Northern Ireland – Consultation on Policy Options.

Consultation contents

In total there are **79 questions** in the consultation.

Submitted to **Energy Strategy for Northern Ireland: Consultation on Policy Options**

Submitted on **2021-06-28 11:46:28**

1 - Introduction

a) I am responding to this consultation as:

Energy sector representative

b) Based on your response to (a) - where do you live or work:

Other (Please state below)

Other::

All Island Representative Cluster of Energy Businesses

c) Based on your response to (a) – where best describes the area you live or work in:

Urban (area wholly within a city or town)

d) What is your name or organisation?

Name:

SMART GRID IRELAND

Our Questions

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

YES

Q2. Do you agree with the proposed outcome of “net zero carbon and affordable energy” for the Energy Strategy?

YES

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

YES

Q4. Are there any key delivery priorities for the Energy Strategy not captured? If so, please outline what you believe should be included.

YES

Localization & Control. Maximising the use of indigenous resources where technically and environmentally appropriate, 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

Key priorities aligned with Energy Strategy for Northern Ireland’s green recovery that should also be prioritised. Some are linked to the identified priorities:

• **Regulation (Linked to Priority 5): Joining up policy & regulation**

o Broadening the mandate of the Utility Regulator to consider the need for decarbonisation and economic development. This would provide an opportunity create a forward-looking regulatory framework that supports innovation and strategic investment.

o 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 and attract investors, all while delivering the best value for customers.

o A review of connection charging policies and regulations to align Northern Ireland with other regions, making it an attractive and competitive place to invest.

o 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**

o Northern Ireland is a world leader in terms of renewable electricity generation, with 47% of all electricity consumed in Northern Ireland now coming from renewable sources. Achieving this, delivering significant economic and environmental benefits for the Northern Ireland economy.

o SGI is advocating for the Northern Ireland Assembly to formally adopt the Economy Minister's proposed target of at least 70% renewable electricity by 2030.
o Many renewable technologies no longer need substantial subsidies, but they do need development of clear mechanisms to provide some certainty around market access and income streams to enable the investments to be bankable.

• Bringing forward network infrastructure

o There is a substantial amount of investment still to be undertaken within the current regulatory price control (RP6), which is due to run until 2024.

o DfE / Regulator could scale up to deliver additional 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 2020-2023. This will require a fast track approach to be adopted by both the Utility Regulator and the Planning Service to ensure projects can be delivered on the ground efficiently.

• Legislation (linked to Priority 4) - Improving the planning process. Essential

o The average planning timeline for major applications in Northern Ireland is 53 weeks, against the Department of Infrastructure's target of 30 weeks. - Why?

o A fast-tracked planning process implemented for 'green development' projects is essential to meet the targets specified in the trimeframe desired. This should prioritise the efficient delivery of low carbon and renewable projects with appropriate targets, timeframes and accountabilities.

o The current Northern Ireland planning processes should be revised, so that renewable infrastructure projects and other grid projects are brought forward quickly, so that Networks can make anticipatory investments ahead of future need and demand.

• **Accelerating low carbon transport and EV - LV charging infrastructure**

o Decarbonising transport in Northern Ireland would be transformative for not only the environment but for the economy and the creation of jobs.

o 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.

o 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.

o 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, the Department should consider private sector investors to kick start the provision of electric vehicle charging infrastructure and finance the investment,

o This would require approval from the Department for Infrastructure and agreement with the Utility Regulator on funding mechanisms.

• **Digitalisation (Linked to Priority 3): Accelerating digitalisation of the energy system**

o 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.

o 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.

o The Department for the Economy should update the business case for implementation of smart metering and initiate a trial of significant scale for smart meters as part of an integrated solution for customers using low carbon technologies.

o Data apprenticeship skills training should be be implemented at different levels

• **Supporting energy efficiency through modernisation of building regulations (Linked to Priority 4)**

o Energy efficiency standards are essential through the modernisation of building regulations. Advanced, sustainable and resilient low carbon housing infrastructure today will avoid the need for expensive retrofitting of properties being built in the years ahead. Benchmark N.I. Building regulations against those in Scotland, GB and ROI where progress towards near-zero carbon buildings has significantly progressed already.

• **Optimising innovation for NI**

o It is essential to 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, biomethane injection, hydrogen electrolysis, intelligent metering and energy storage.

o 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 key important to the policy areas in the future energy strategy:

• Priority Area 2 - Costs - protecting vulnerable customers

• Priority Area 1 - Security of supply - right mix and balance of indigenous generation; adaptation / resilience

• Priority Area 6 Governance - accountability

Q5. Do our proposed indicators adequately allow us to measure success at achieving the proposed Energy Strategy outcome? If not, please advise on what alternative metrics should be used. a) Carbon emissions from energy-related sectors b) Jobs and turnover in the low carbon and renewable energy economy c) Domestic energy costs relative to household income d) Business energy purchases relative to business turnover e) Households in fuel poverty f) Relative electricity & gas prices

Do our proposed indicators adequately allow us to measure success at achieving the proposed Energy Strategy outcome? –

a) Carbon emissions from energy-related sectors:

Yes

Do our proposed indicators adequately allow us to measure success at achieving the proposed Energy Strategy outcome? –

b) Jobs and turnover in the low carbon and renewable energy economy:

No

Do our proposed indicators adequately allow us to measure success at achieving the proposed Energy Strategy outcome? –

c) Domestic energy costs relative to household income:

No

Do our proposed indicators adequately allow us to measure success at achieving the proposed Energy Strategy outcome? –

d) Business energy purchases relative to turnover:

No

Do our proposed indicators adequately allow us to measure success at achieving the proposed Energy Strategy outcome? –

e) Households in fuel poverty:

Yes

Do our proposed indicators adequately allow us to measure success at achieving the proposed Energy Strategy outcome? –

f) Relative electricity &

gas prices:

No

If you selected "No" to any of the above, please outline below any alternative metrics we could consider::

b) *Jobs and turnover in the low carbon and renewable energy economy.*

Consider additional measures of:

• Ranges of skills developed or enhanced

An indicator of success in the transition is the change in the skills base will be enhanced through new technologies being adopted with new training courses supporting the transition while bringing a range of new skills into the sector.

• FE course and data apprenticeship opportunities created / enrolled

A direct indicator of the emerging workforce skills to meet future requirements will be to monitor FE courses and apprenticeship programmes across sectors to determine any potential shortfalls or gaps.

c) *Domestic energy costs relative to household income.*

Consider additional measures:

• 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 the following measures:

• Energy consumption – for all primary energy sources

As with domestic, it would be a useful to measure consumption from all primary energy sources including purchases and costs.

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 (NIRO) in their retail bills whereas gas suppliers do not; and

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.

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 that they are made on a fair and equitable basis.

Q6. Do you think there are significantly different illustrative scenarios which should be developed? If so, please provide further information. Placing You at the Heart of our Energy Future

3 - Scenarios to Net Zero Carbon Energy

Yes

If "yes", please provide further information.:

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.

Reference the joint working group 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 Joint working Group models.

The Consultation does not present the associated costs of the scenarios and does not appear to be possible in the ETM. 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.

SGI would refer DfE to the modelling work presented by the NIEN / SONI joint working group report, where the impact on the transmission and distribution network in terms of investment costs are assessed for the scenarios considered.

4 - 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

Do you agree with the four consumer populations we have identified? - Domestic consumers living with more vulnerable circumstances:

Yes

Do you agree with the four consumer populations we have identified? - Other domestic consumers:

Yes

Do you agree with the four consumer populations we have identified? - Small business consumers:

Yes

Do you agree with the four consumer populations we have identified? - Larger business consumers:

Yes

Please advise below on key considerations within each::

With regards to terminology it should be noted that we are all energy users as opposed to consumers. None of the categories adequately covers community energy systems.

• Classification of customer groups might make it easy for people to identify which category they belong to however, we would suspect that this information would not be used by the utilities as a data measuring metric. To label a customer group as vulnerable would not be a category known to the utility nor would they be acquainted with the number of employees operating within a business to categorize it except by observation.

• 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 of consumers? This register will be required to track people as they change residence and/or status to non-vulnerable. DfE should be aware of work progressing in this area by the UR under its Consumer Protection programme.

• It is essential that vulnerable customers are not disadvantaged and that the measures to enable and protect them are effective. Extensive consultation on this subject with representative bodies will be necessary.

In addition;

• Smart Grid Ireland understands that In conjunction with the ENA Open Networks Project Working Group NIE Networks, 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 TSO or NIE Networks as the 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 business – 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 need.

2. **Active participants**

These customers are also sophisticated and highly enabled, and have invested in distributed energy resources (DER), demand side management or 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

o 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 be both 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 not, 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

If "no", please outline below 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

The measures identified appear to be comprehensive, however SGI would suggest consideration 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:

o Lower connection costs would enable more consumers to connect low carbon technology. The current charging mechanism may deter many domestic customers from adopting LCTs. 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. Furthermore, Ofgem is currently considering reducing or removing entirely any network reinforcement costs included in charges applied to customers connecting LCTs.

The thinking being that such a change in policy would reduce barriers to small users adopting LCTs. In RoI, a proportion of the cost of connection is socialised. SGI considers that the connections model followed in GB or the RoI may be better suited for facilitating the journey to net zero carbon in NI. As such, we 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.

o Tariff reform to provide fair cost recovery and ensure passive / vulnerable customers are not paying a higher proportion of network costs than is appropriate.

■ The 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, SGI 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.

o Tariffs should also provide the right price signals to encourage and reward consumer behaviours which reduce future cost for all customers.

■ 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;

■ The Introduction of smart meters will provide better and real time information on energy usage and facilitate the introduction of more flexible tariffs.

2. 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.

3. 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.

The Utilities should endeavour to minimise the detriment experienced by any such customers by:

• 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...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. Energy Strategy for Northern Ireland Consultation on Policy Options 12

Yes

Please outline below any different activities you think should be included.:

Smart Grid Ireland agrees with the concept of a one-stop-shop. Other functions which will be necessary to deliver this strategy will include scoping of and funding of appropriate energy research, membership of and liaison with other relevant national and international bodies, and delivery of executive functions on behalf of the department. These are energy agency functions.

Mention has been made of the Sustainable Energy Authority of Ireland (SEAI) as a model to follow. It is important to note that SEAI is an agency under the auspices of its parent department. It delivers executive functions on behalf of government, where, as an agency, it is better placed than the civil service to do such. It provides programmes which benefit energy users, such as home retrofit programmes and community energy initiatives.

However, years of growing mistrust of information put out by government, utilities and multinational companies, has identified a need for the availability of information that energy citizens need in order to be informed and that citizens can be trusted by them because it comes from an independent body. This is being advanced elsewhere, e.g. Germany.

The narrative about the proposed “one-stop shop” in this process would seem to imply that one body can deliver all of the above. That would seem an “easy fix”, but it needs more indepth analysis of the various needs of energy users. Some of these needs include:

• 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.

Fund an external delivery organisation

Please outline below your rationale::

SGI considers that 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 organisation should seek responses to customer queries from the relevant experts and/or delivery bodies rather than sign posting them to the appropriate people/organisations.

This organisation should be arms-length from government. Key will be its independence to provide balanced and accurate information for all customers. What NI does not need is another new organisation rather than restructuring of a current private sector organisation. If communities are not on board the energy transition will not happen, therefore we need a trusted, consumer focus, one stop shop that is adequately resourced to deliver support to consumers and advice to government

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.

Yes

If "yes" please provide more details below on what support you think would be needed. :

Domestic consumers living with more vulnerable circumstances, Other domestic consumers, Business energy consumers (1-49 employees)#, Business energy consumers (50+ employees)

Direct energy support or subsidy should be avoided.

Extensive international evidence, particularly from developing countries, shows that this masks the true cost of energy provision to customers, thus reducing their understanding of this and thus their incentive to use energy in a more rational way.

Financial supports should not be set against energy bills, but should be separately managed.

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 which 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 – this 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.

Where possible a 'pay as you save' model could be adopted. Many of the investments needed for the energy transition will result in net savings. However, payments will need to be made up front to realise these savings. This is true at: system level e.g. 1. investment in grid to facilitate greater renewables penetration will result in a reduction in wholesale electricity cost. 2. domestic level e.g. investment in an electric car will result in significant fuel savings.

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.

Do you agree with the four identified priority clean energy sectors - Energy efficiency:

Yes

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

Yes

Do you agree with the four identified priority clean energy sectors - Hydrogen economy:

Yes

Do you agree with the four identified priority clean energy sectors - Circular economy:

Yes

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

Smart Grid Ireland believes that integrated energy planning and provision is almost the opposite of sectorisation. This implies “energy push”. It should be “demand pull” - determining what energy services are required, and then working backwards to establish the most appropriate energy vectors to deliver such services.

Page 34 of the 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 covered in this respect. Consideration should also be given as to how these two sectors might also cross over with the hydrogen or Biomethane economy.

Innovation should be a key activity for consideration in developing clean energy sources. Northern Ireland is world leading in RES-E with 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

Please outline below any supporting policies you believe are needed to take advantage of these?:

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

Articulating the energy mix

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

Connecting to the network

Northern Ireland’s Statement of Connection Charges (SoCC) is currently not aligned with GB and ROI, which could be seen to place Northern Ireland at a disadvantage in attracting investment in future renewable and low carbon solutions.

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 and provided significant capacity, technical and environmental benefits for the connection of renewable generation.

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 is due to run until 2024.

• 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, ahead of future need and demand. SGI would 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 and all while delivering the best value for customers.

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, SGI 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 Q 8)

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

Buildings.
The 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. 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. (refer to response to Q25).

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."

See also response to Q27

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 and Biomethane is also likely to play a role, particularly for larger transportation to cover long distances and for pipe injection into the gas grid.

To facilitate and support this transition the most urgent action required is for a strategy to develop a holistic EV charging infrastructure 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 – what is needed is a cross- departmental government EV Taskforce 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. (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.

I would also add that estimates that the setting of an 80% renewable electricity (RES-E) target for 2030 along with aligning policies will stimulate over £1bn of new investment from the renewable electricity sector. This will help power a green economic recovery

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

Please outline below any supporting policies you believe are needed to take advantage of these?:

Smart Grid Ireland contends that unlocking investment in low carbon infrastructure and fast-tracking decarbonisation of heat and transport. These recommendations would enable NI to tackle the climate emergency and 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 UR to allow it to consider net zero and wider economic benefits for NI 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.

o Connection charging policy

■ Commence a review of connection charging policies and regulations to align NI with other regions, making it competitive and an attractive place to invest.

o 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 NI enables achieving 2030. o Bringing forward enabling investment to provide the infrastructure required for a new target for renewables.

o Endorse regulatory actions to accelerate forward investment in the network.

o **Improve the planning process**

■ Develop 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;

■ 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 EV charging infrastructure

■ Establish an EV Taskforce to propose interim policy changes to Government that will help grow electric vehicle uptake in NI 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 NI to ensure that UK funding is apportioned equally between the regions. Funding must also be ring fenced so that when allocated to NI, 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 NI, focussed first on 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 **SoCC and tariff reform**

■ Socialised connection costs;

■ Rebalancing of 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 pricing – encouraging a higher uptake in Economy 7 type tariffs by small business and domestic customers and developing ToU charging arrangements for new technologies.

o **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 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.

o **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 moving to a standardised capacity allocation and allowing demand connections at cluster substations.

o **Support for solar PV and low carbon heating**

▪ Provision of funding streams for adopters of solar PV and low carbon heating systems.

o Connection charging methodology

▪ Low demand growth in NI over the last decade(s) can, in part, be attributed to high connection costs acting as a deterrent for investment in NI. A growth in demand will benefit NI through job creation, economic growth, positive impact on fuel poverty and lower price of each unit of electricity.

▪ The current connections charging methodology in NI is out of step with the rest of the UK and ROI. Resulting in investment being redirected into markets with cheaper connection costs.

SGI believes 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. Investment must 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

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?

Yes

Please outline below any supporting policies you believe are needed to take advantage of these?:

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.

The Frontier Economics draft study on Opportunities and Risk of Hydrogen in NI gives the following narrative:-

Production

Green hydrogen: the most likely option for hydrogen production in NI

• NI 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). Blue hydrogen: unlikely to be an option for NI 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. Note that this appears to be inconsistent with DfE's modelling, which assumes a large role for hydrogen production using SMR with CCS. The carbon storage location is unclear; it could be transported to storage sites in Scotland or North West England;

• 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 NI. 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 NI 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 North African countries could be an attractive low-cost option if demand for hydrogen in NI increases. Alternatively,

imports from GB/ROI may be possible where transportation costs will be lower (for example via the SNIP).

Demand

Road and other forms of transport is likely to be a key source of hydrogen demand in NI in the mid-to-long term

• **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. 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.

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

• **Near term:** Most large, low-margin industrial customers are unlikely to switch to hydrogen in the 2020s, even if government funding is available. This is because these processes require a highly resilient energy supply, which may be difficult to provide in the early stages of the hydrogen production industry (particularly where industry is geographically dispersed). 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;

• **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 CO2storage 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

• **Near term**. Blending hydrogen and Biomethane in the gas grid may be an early source of demand.

• **Long term**. Some dense urban areas could be converted to hydrogen, and many NI pipelines (we understand) are already compatible with hydrogen so would not require retrofitting. 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.

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

• **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 storage (across NI 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

Please outline below any supporting policies you believe are needed to take advantage of these?:

SGI considers that business and commerce should be encouraged to undertake a high level circular Economy strategic assessment of their organisation so that management can put the correct actions in place to carry out continuous improvement across the business operations. We would recommend the use of the European Circular Assessment lens developed by EFQM Brussels and applied throughout the EFQM EU network.

The assessment will highlight all those areas to be addressed as well as good practice and international sharing of good practice through the Centre for Competitiveness.

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

If so, please outline below what scale and type of innovative projects should this support?:

SGI recommends that the fund should be designed along Science Foundation Ireland / U.S. N.S.F. principles: Pose the problem and invite bidders to propose appropriate technical solutions, rather than conventional defined-technology grant schemes.

• 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. LCNF - £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. NI 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 NI networks;

• Community Energy Schemes – there is little by the way of Community Energy Schemes in NI however there is opportunity to explore and trail these to demonstrate the potential in NI.

• 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 – ie: 1-1 relationships between cross vector utilities in NI 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 prevalent in NI (E.G. res-E/SYNCHRONOUS AREA), the electricity system could be used as a test bed for lower TRL innovation products. Northern Ireland can benefit from its unique characteristics, having a smaller network and almost 50% RES-E, which lends a good test best to trial R&D type innovation projects on the network. There is benefit in collaborating with industry and academia for 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?

Yes

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

It is clear the regulatory approach taken in the previous decade is not suitable to facilitate the delivery of our decarbonisation objectives. Based on the TES analysis we need an additional 2.75GW of new renewable generation by 2030 to achieve 80% RES-E in a high electrification scenario. We will need to deliver system upgrades at an unprecedented pace.

While the current regulatory approach helped NI to achieve the target of 40% RES-E by 2020 it is not fit to facilitate the rate of change that we require now. In order to make this shift in approach it will be necessary to incorporate “facilitating the delivery of a net zero energy system” into the Utility Regulator’s mandate. It follows that the Regulator would also need to be resourced adequately to fulfill this function.

Regulated industries should be allowed to undertake anticipatory investment in infrastructure which facilitates policy objectives, rather than just immediate costs which can be recovered within a given regulated period.

The energy regulator can currently not allow such costs to be recovered. Not all green recovery means innovation with higher risk.

Those innovation projects bearing higher risk can be “insured” by government backstop funding similar to current European Investment Bank programmes.

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. SGI 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.

This doesn't preclude being a 'fast follow' 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 for a more proactive position 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.

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

Please outline below specific opportunities in the local research base that could be progressed.:

Northern Ireland has good third level research capabilities in the energy sector with good international and national linkages ; however their ability to participate is hampered by current "stop/start" funding mechanisms. Longer term more flexible programme support mechanisms with "open calls " are needed to maximise the benefit from these resources. Research mapping – We should maximise our research potential within NI 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 NI 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.

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? Energy Strategy for Northern Ireland Consultation on Policy Options 13

Yes

Please outline below how activities within these routes can be shaped to meet the needs of the sector:

Digital and engineering skills are critical in upskilling within the energy sector. For example Multiverse.io a private sector organiszation in the UK are working with partners such as Morgan Stanley, Google, Deloitte, Asda, Accenture, Asda and others includiing the UK government to provide apprenticeships in data, S/W engineering etc including leadership training for industry and government. They are also in discussions with the Centre for Competitiveness NI.

Example of Multiverse training:

• Within the Utilities Sector they are launching Data programme with EDF imminently.

• Outside of commercial Enterprise, they work with over 300 clients, and input on Apprenticeships with the UK Government, particularly around Youth employment and hospitality sector.

• Multiverse.io have exchanged on future of work ideas with Lord Bilimoria, current President of the CBI, on a number of occasions.

• Multiverse.io are currently working on rolling out strategic Data programmes at scale in the Civil Service, the NHS and the MoD, all of which current have the MV Apprenticeship programmes already up and running.

While NI has a plethoria of training provision channels, it would seem sensible to have one focus organisation delivering and developing specifit energy /

decarbonisation related programmes for delivery through multiple delivery channels to maintain focus.

DfE should provide funding support for a Joint Utilities Entry Level Skills Programme including areas such as Level 3 Metering Technicians and Green Economy Heating Operatives, and Level 4 Renewables Technicians and Futures Electrical Technicians. This would make a real difference in terms of providing skills to support the energy transition and providing training and employment opportunities to support a green recovery.

Engineering focused MSc programmes in the area of offshore renewable energy are needed to advance the development of innovative technologies.

Re-skilling for the fishing industry would be useful in relation to the offshore wind projects which require survey and guard vessels as well as crew transfer vessels. Fishermen who are considering utilising their vessels for another purpose could receive training to enable them to provide these services and build up a new business.

The East of England Offshore Wind Skills Centre is a training centre in Great Yarmouth which was established to retrain local people to get sustainable jobs in the offshore wind sector. Aura and Green Port Hull commissioned a study entitled Skills and Labour Requirements of the UK offshore wind industry 2018-2032, The study was funded with support from the Regional Growth Fund. The study has conservatively estimated that each MW of wind results in 1 direct job. In Northern Ireland for a notional target of 1GW of offshore wind, would result in 1,000 new jobs.

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

If so, please outline below what you believe is the role, remit and membership of such a group::

Role: to provide a mechanism to assess and characterise the skills required for accomplishing the necessary energy transition over a given timeframe. The role should 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 NI now and in the future.

Remit: an elaboration of the above. The main outcome needs to be a strategic in nature with 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 NI.

Membership: representation from the energy supply sector, including transportation networks and customer interface businesses, energy professional institutions,academia, skills providers, local manufacturing, contracting and consulting organisations, community energy interests and consumer representatives

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

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

Smart Grid Ireland believes that the energy transition should be a just one. As part of this goal it is important that there is wide access to the benefits of the transition and that a pay as you save model is operated as far as possible for the consumer. Where up front costs cannot be immediately mitigated by savings then vulnerable consumers should be protected.

The unfortunate nature of energy privatisation as implemented in Northern Ireland has resulted in many energy players and assets being owned by entities outside Northern Ireland, far removed from citizen interests.

While energy regulation covers some areas of oversight, mechanisms for ensuring compliance with the agreed just transition need to be made more comprehensive.

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.

Some measures which could enable this transition should include:

• 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.

• **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 further 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, 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 and flexible users;

• Develop time of use pricing – encourage higher uptake in Economy 7 and develop new time of use charging for new technologies and finally.....

Customer Connections

A further area of impact for customers which should be under consideration is the cost of connecting new customer premises or technologies to the distribution network. The current charging mechanism may deter many domestic customers from adopting LCTs. 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. Furthermore, Ofgem is currently considering reducing or removing entirely any network reinforcement costs included in charges applied to customers connecting LCTs. The thinking being that such a change in policy would reduce barriers to small users adopting LCTs. In RoI, a proportion of the cost of connection is socialised.

Smart Grid Ireland 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

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

If "yes", please outline below what type of building should be the early priorities for introducing minimum standards?:

Smart Grid Ireland notes that the terms “energy efficiency” and “energy savings” are not synonymous. Energy savings can arise from more rational use of energy, which includes energy efficiency measures but also other actions. As a starting point all new builds should be required to have EPC/BER certification; this includes domestic, commercial and industrial buildings. Secondly, all buildings requiring planning permission for work done to them should be brought into the net.

SGI also supports the view that it is essential that minimum energy efficiency standards are required for all domestic premises across all tenancies. Landlords will need a lead in time for any increase in required standards.

In terms of prioritising stock for early adoption and trial, Smart Grid Ireland 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.

No

If "no", please outline below what achievable timescale or programme should be implemented, and your rationale for this.:

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.

SGI considers that Phase 1 interim uplift during 2021/22 should include for the provision of EV 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 so, please outline key issues that would need to be considered.

Yes

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

SGI believes that the element of domestic rates relating to water should be identified first and separated out from the rates under discussion. (Water charges should be introduced at the earliest opportunity; it is inconsistent to tackle energy usage and not introduce usage-based charging for water).

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

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

If "yes", please advise below what changes are needed to the wider energy efficiency support landscape to ensure a joined-up approach?:

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.

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

Please outline below any changes you believe should be made to the level and scope of the PSO for energy efficiency.:

The PSO levy would initially would seem to be 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 and the question of the PSO applying to all 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 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). By replacing the PSO charge based on electricity usage with fixed PSO charges per consumer, similar to local council rates charges, this would facilitate a fairer funding mechanism, independent of the consumers choice of energy source.

In any case a pay as you save approach is needed that vulnerable consumers should be supported first.

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

If "yes", please outline below which specific green finance solutions should be explored?:

Smart Grid Ireland suggests that a pay as you save approach is needed that vulnerable consumers should be supported first. 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 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.

Arriving at 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.

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

If "yes", please outline below what type of support do you believe is most appropriate for different groups of business consumers?:

Invest NI should not be delivering what the private sector can deliver. Their role should only be in providing grant support for business which is likely to be different than support for domestic. Investment decisions regarding energy efficiency will be considered alongside other business investments, sustainability commitments and CSR agendas. A bespoke support programme tailored to different business and sectors seems appropriate and would cover:

• Information and advice;

• Technical design services;

• Financial assistance schemes.

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 product was available at a materially discounted rate. If financial institutions introduce cheaper lending products for more energy efficient homes then something like this would be welcomed.

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

If "yes", please outline below what specific green finance solutions should be explored?:

As outlined previously, ability to pay for green investments will vary across energy consumers. This is equally true of business consumers therefore it is important that there is access to affordable finance for both commercial and domestic consumers.

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? Energy Strategy for Northern Ireland Consultation on Policy Options 14

Yes

If "yes", please outline below how can we help to prepare the sector for these changes?:

Smart Grid Ireland believes that 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. 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 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 EV chargers and electric heating, Northern Ireland should consider adopting an equivalent Building Regulations. it is important that installers are properly regulated to include industry standards. This applies to both energy efficiency and low carbon technologies.

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

If "yes", please outline below which key behaviours that should be targeted?:

SGI suggests that there are lessons learned from RHI inquest. A properly-specified smart meter installation programme should be implemented as part of information provision and awareness raising. It is important that consumers are empowered to be energy efficient. Messages should emphasis the importance of comfortable living temperatures rather than simply turning down heat which could have unintended consequences.

Smart meters and the associated TOD tariffs can play a huge part in the behavioural change element of this. (KO'D) 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.

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. In an integrated energy system of the future, it is important that heating options are developed that present real alternatives to the NI 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 EVs.

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. This is where nan independent source would be a distinct advantage in helping to raise awareness and behavioural change

Q34: What measures do you think can have the most impact to support people to reduce the miles they travel in private vehicles? Please explain your rationale. Replace Fossil Fuels With Indigenous Renewables

Please explain your rationale below::

Smart Grid Ireland promotes that development of greater decarbonised 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:

o reduced traveling for internal meetings;

o travelling to external meetings, training, seminars etc.;

o access to pooled EV transport;

• Reducing emissions impact through electrification of transport and decarbonisation of energy system; albeit not completely carbon free:

o Promotion of schemes to transfer personal transport away from Internal Combustion Engines.

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

Yes

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

a) Projects can be delivered in a cost-effective manner.

b) Offshore wind can be delivered by 2030.

c) Storage technologies can minimise system curtailment of renewables.

d) Greater clarity on electricity demand for heating and transport.

e) Consumers' bills are not disproportionately impacted. If not, what alternative criteria might be used?

- Projects can be delivered in a cost-effective manner.:

Yes

- Offshore wind can be delivered by 2030.:

No

- Storage technologies can minimise system curtailment of renewables.:

Yes

- Greater clarity on electricity demand for heating and transport.:

Yes

Consumers' bills are not disproportionately impacted.:

No

If you selected "No" to any of the criteria above, please outline below which alternative criteria might be used instead?:

b) SGI believes that while offshore wind can be delivered by 2030. – it will require commitments and policy movement immediately or this is unlikely to be achievable. Process delays may include

• Crown estates leasing – next round of leasing is 2023 (2-year process) 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

e) With regards to user bills, key considerations for achieving future renewables targets include the following a) Smart metering roll out significantly underway. (Ref response to Q73)

b) Tariff reform enabling ToU and potentially locational tariffs. (Ref response to Q22)

c) Planning reform. (Ref response to Q4,13,14)

d) Efficiency of the current D5 approval process

e) Adoption of a more proactive investment strategy. (Ref response to Q13)

f) Connections 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

If "yes", please outline below what terms would be needed to ensure generation in the region whilst protecting consumers?:

Smart Grid Ireland suggests that before settling on a CfD approach, other forms of support scheme should be examined, e.g. AER, RESS, ROC

GB has introduced 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 NI 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

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 RESS scheme 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.

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.

Yes

If "yes", please outline below what targeted actions could be taken to deliver this.:

SGI suggests that 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. Estimated Time lines evidenced as follows:

• Leasing and Plan-Level Habitats Regulation Assessment (HRA): Estimated 1-2 years

• Development and Consenting: Estimated 5 years

• Procurement and CfD: Estimated 2 years

• Construction: Estimated 3 years

o Assign Transmission Lease to OFTO -
Transmission Lease is assigned to the appointed

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

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 Estates for GB have not been previously tested in NI. 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

• cost of connection to grid - is it 100%

• Grid development needs (linked to location) and network reinforcement project approved quickly. – it is therefore important that a more proactive approach to network development can be accommodated and the current D5 approval process with the Regulator is made more efficient

• 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 – NI hasn't delivered this before.

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?

Yes

If "yes", please outline below how you propose some of the associated challenges could be overcome?:

Smart Grid Ireland consider that measures should be technology neutral and 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 NI 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.

Q40: Do you believe that floating platform offshore wind offers the best long-term opportunities for offshore wind in Northern Ireland's waters? If so, what additional steps could be taken to encourage these projects?

No

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

If "yes", please outline below what technologies offer the greatest potential and what steps can be taken to support these:

SGI recommends that 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's 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

If "yes", please outline below the practical steps that could be taken to deliver this.:

Smart Grid Ireland notes that 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. 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;

- Cluster s/s consultation – connecting demand into clusters;

- Reference the SONI consultation ‘Shaping Our Future Network’;

o Co-existence of generation and demand;

o 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. Energy Strategy for Northern Ireland Consultation on Policy Options 15

Yes

If "yes", what share do you think would be reasonable?:

• 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 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”

• Smart Grid Ireland 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:

c. improved health through reduced air and water pollution:

d. Access to new electricity markets:

e. Improved network resilience and security of supply.

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

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

Q46: What low and zero carbon heat solutions do you believe we should prioritise for trials? Please identify where such trials should be focused and what key issues should be tested within each.

Demonstration project supports should be technology neutral and focussed on desired outcomes. For example, trials are not required to prove the technology of heat pumps alone as the technology is reasonably mature. It has been proven worldwide that heat pumps work in the right conditions. NI 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 or other technology solution installation

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

Demand pull rather than supply push approach should be utilised. Performance v claims and replicability should be assessed. The three issues to be tested are the form, fit and function of the solution. Does it do what it says on the tin and are the customers satisfied with it.

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.

No

Please outline below what you think the specific roles should be:

• Initially, heat pumps are likely to be the solution for

a) new builds either on or off the gas grid and where...

b) off gas grid 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 EVs 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 should be

supported to determine if there is any specific consideration to serve on or off gas grid customers.

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

If "yes", please outline below the key issues that need to be considered in designing and delivering such a scheme.:

Smart Grid Ireland's initial response it that It should not be a pilot scheme.

The performance of similar schemes in other jurisdictions should be studied for lessons learned before implementing such a scheme. 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.

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

Yes

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

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

If "yes", outline below what key issues must be considered within it?:

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 / Biomethane wtc wtc 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: Do you agree that the sale and installation of new oil boilers should not be allowed for consumers on the gas grid? Please outline your rationale and, if you agree, what a viable timeline for introducing this might be?

No

If "no", please outline below what is a viable timeline for introducing a ban on oil boilers for on-grid consumers?:

• Oil and natural 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?

No

If "no", please outline below what is a viable timeline for introducing a ban on oil boilers for off-grid customers?:

• For existing dwellings and given the high current reliance on oil for heating in NI, 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

If "yes", please outline below what key issues must be considered within it?:

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 NI 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 NI

• 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.

Yes

If "yes", please outline below 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? Energy Strategy for Northern Ireland Consultation on Policy Options 16

No

Please outline your reasoning: :

Allow for innovation - necessity is the mother of invention.

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

If "yes", please outline below what Northern Ireland specific issues need to be factored into this in order to accelerate the uptake of Zero Emissions

Vehicles

Smart Grid Ireland members have advocated that an 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

• NI 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 NI being 100% chargeable to the connecting applicant – presenting financial hurdles which differs to the rest of the UK;

5. NI having its own Utility Regulator which will have a different mandate to Ofgem limiting its capability to include decarbonisation drivers when considering final determinations of infrastructure investment allowances.

• While an NI 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 Connection Charges. Connection customers in Northern Ireland pay excessive for 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;

3. Adequate funding mechanisms in place to adopt shallow connection charging;

4. Considerations for Tariff reform to allow more flexible tariffs targeted at EV charging primarily towards domestic but also commercial customers;

5. Permitting proactive network investment rather than the current reactive approach, which will inevitably become a blocker to EV charging on the network;

6. 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;

7. 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;

8. Recognising the potential for a great utilisation of renewable cluster infrastructure proposed under NIE Networks consultation seeking to connection 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

If "yes", please outline below what key messages would be most impactful for consumers as part of this?:

SGI advocates that this campaign scope should be set by the 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 the Network 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 LV network from increasing volumes of EV's charging simultaneously allowing NIEN 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

If "yes", please outline below what barriers can government address to ensure that such projects are commercially viable?:

Ref EU Directive that this is a market activity

List our barriers from the Green recovery:

• funding model

• strategy and lack of

• connection charges

• planning issues with local councils

• existing infrastructure - lack of investment

To date, it has already been proven that the private sector alone will not deliver a suitable large scale 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 larger 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

If "yes", please outline below what the key priorities of the plan should be?:

SGI considers this should be executed 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 NI 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 NI.

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.

Similar to previous points raised in Q57 and Q59, any infrastructure plan needs to account for suitable and realistic funding mechanisms should this be separated into categories for the EV charging infrastructure as one category and the connection infrastructure as a separate category which would enable different parties being responsible for the delivery. Or, wrapping the infrastructure up into one piece of work where the connection and EV charging infrastructure are combined into the one proposal, possibly categorised by the charging type e.g. ultra-fast hubs, on street or destination charging

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

If "yes", please outline below 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 fueled 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

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

If "yes", outline below how the government can help to encourage the private sector to trial and use these fuels?:

Electrification and hydrogen can provide a zero carbon solution for all transport needs and these should be the focus of government support

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?

Yes

If "yes", outline below what potential applications could be the initial focus for demonstration projects?:

CCUS should only be deployed only as a last resort. The potential for CCUS in NI is based on available sites with appropriate geology. Given that CCUS is intended to be provided on a UK basis (CCC), it should only be explored in NI if it is the most economic option within the UK context/ plan. Carbon Capture and Sequestration is viable for power generation and some large industrial situations. Suitable storage locations have been identified in NI and in the Irish Sea.

Q65: Do you believe that our approach to petroleum licensing should change in line with our commitment to decarbonise energy? Create a Flexible and Integrated Energy System

Yes

- 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 initial priorities of such a plan be?

Yes

If "yes", please outline below evidence to demonstrate what the priorities of such a plan should be?:

Smart Grid Ireland agrees that Electricity Network and System Operators provide a long-term pathway to creating a flexible and integrated power system. NIE Networks must work collaboratively with SONI on a regular basis as they 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 NI. This roadmap was intended to be a key input to the Department for the Economy energy strategy and policy process.

NIE Networks and SONI with their shared expertise can continues to provide whatever support and expertise is required in the process and also continue 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.

SGI is aware that 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 and which has been part of thier discussions with DfE.

It is understood 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

• 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

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’ – SGI has reviewed the paper presented by NIE Networks 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 they are confident that swift action will maximise the economic opportunities for NI as we manage our way through the COVID-19 pandemic, alongside progressing towards net-zero ambitions. It outlines 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:

• The System Operators (SOs) will be crucial to realising on the ambitions of the energy strategy and as such, they should be set targets for delivery. As well as a

>95% System Non Synchronous Penetration (SNSP) target for 2030, the SOs should also have targets for constraint and curtailment.

• SONI have recently completed Tomorrow’s Energy Scenario Northern Ireland 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 including Smart Grid

Ireland following an extensive consultation. The scenarios have been 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 -2020-2029. In this statement, They 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. SONI has commited 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. Smart Grid Ireland are aware of the following statements by SONI..

• Transmission Forecast Statement - SONI publish the annual Transmission Forecast Statement, highlighting opportunities for new generation and demand.

• 'Transmission Ten-year Development Plan' -

• 'Transmission Needs Assessment'

• 'Shaping Our Electricity Future consultation' - Shaping Our Electricity Future which is an ongoing extensive consultation involving government, industry, stakeholders and the public, allowing everybody to have their say on how the transmission system should be developed to meet anticipated clean energy targets.

On conclusion of this process, a final roadmap will need to 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.

• Finally, there should also be a requirement to publish quarterly ATR reports as is the practice in ROI given the common ownership of the Transmission System

Operators (TSOs), it is hard to understand why this is not happening already. In NI it could to be a case of what does not get measured, does not get done.

Q67: Do you agree that 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

If "yes", outline below what opportunities and barriers exist for such plants?:

Coolkeeragh has proven effective in maintains Grid stability and security of supply as well as limited kWh output; a big change from its original role.

An important technical parameter for electricity networks is “inertia”. This is provided by “heavy” convention generating plant. It is largely not provided by gas fired CCGT plant or wind energy.

Ballylumford and Kilroot have already demonstrated their ability to change from oil and coal and Kilroot has exciting plans for further evolution. They must be facilitated to do so, including payment for the services they can provide, and not just for MWh output.

Our conventional plant need to be able to operate in an optimum way. This is currently not possible, partly due to the continuing absence of the second North/South Interconnector. This results in sub-optimal generator operation, with low efficiency, higher than necessary emissions, and higher costs for all customers.

All remains barriers to the implementation of the second North/South Interconnector must be tackled as a matter of urgency. All remains barriers.

It should also be noted that it is not just the Network Operators who are to be involved with this - the network owners need to be facilitated in scoping out and building facilitative and flexible electricity systems. The evidence for doing this is in the current performance of the Grid.

The All-Island Grid Study showed that the then existing system could tolerate up to 42% penetration of variable renewable energy without compromising security of supply. That is a tribute to the system designers, constructors and operators. Therefore the priority should be to enable, through policy, legislation where necessary and enlightened regulation , those players to do more of what they have already demonstrated that they do very well.

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

If you answered "yes", is a new revenue mechanism needed to bring forward this investment? Please outline below.:

There are several models in play with the existing Interconnectors between the island of Ireland and the UK and Europe. Because of differing ownership and operating regimes, no single revenue mechanism suits all cases. The policy, legal and regulatory regimes should allow for appropriate mechanisms to be proposed and examined on a case-by-case basis.

SGI fully supports the development of the second North-South interconnector and it is vital that it is delivered no later than 2025. It is also critical that the export capacity on the Moyle interconnector is increased. We welcome announcements on the potential increased physical export capacity on the interconnector. It is critical that works by SONI and NIE to enable the full export on the Moyle interconnector are delivered on schedule. It is also important that SONI work with National Grid to maximise the potential for the British Transmission System to facilitate imports from Northern Ireland at times of high renewables on the island of Ireland.

SGI also support the development of the Greenlink and Celtic interconnectors. These new interconnectors will help reduce all-island curtailment. It is critical this infrastructure is delivered on schedule within this decade. Delays to these interconnectors will impact on dispatch down levels of the renewable generation required to meet the 2030 targets.

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.

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 will 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 to our knowledge, that require to be resolved by its operation.

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. Energy Strategy for Northern Ireland Consultation on Policy Options 17

Yes

If you answered "yes", please outline below what key decisions are needed to achieve this.:

• Planning, policy and regulatory time horizons must be extended to allow for optimal pathways to the agreed future scenario to be achieved.

o 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.

o 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

o 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.

o In GB 1166MW of Flexibility services was contracted in 2020. We need to ensure incentives and infrastructure are available to grow the market in NI.

o 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.

o The current connections charging methodology in NI 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

If "no", please outline below evidence that demonstrates what additional market routes may be needed.:

o 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;

o 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 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;

o 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.

o 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.

o Customers should have the ability to stack DS3 services and distribution Flexibility services.

o 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 at least 50% of respondents believed NIE Networks should provide services in some form, with Last Call provider marginally the favoured option.

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

If "yes", please outline below the key considerations that need to be factored into this framework.:

SGI considers this information as, literally, power.

The more appropriate actors know, the better and more efficiently they can perform.

Allowing industrial, commercial and domestic customers to understand their energy usage patterns and give them informed control will benefit all and contribute to all policy objectives.

The much-delayed smart meter programme must be commenced as soon as possible, with proper consideration given to appropriate specification of needs rather than cheapest possible. Studies have shown that economic benefits will justify such an approach.

o DNO notification of LCT should be a pre-requisite for the receipt of any financial incentive. If NIEN don't know about where they're connected, then NIEN can't invest in the right areas of the network;

o Role of smart meters is critical to the network operators. Significant use case for DNO getting access to smart meter data – efficiencies, etc (Research underway and our 1000x smart meter trial) will help quantify the benefit of smart meter data. (Ref also response to Q73 smart meters);

o There's significant benefit in the additional network data that smart metering can provide. Customer anonymity is paramount - NIE Networks should not be concerned with customer specific information, but only 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.

o 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 should provide flexibility and ensure optimisation of infrastructure reinforcement;

o 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

If "yes", please outline below on key differences with Great Britain that need to be factored in.:

With regards to Meter ownership.- in RoI, meters are owned by the networks businesses. In GB meters belong to the electricity supply businesses as a result of the privatisation model implemented there. Such businesses are not best placed to achieve long term policy objectives in this area.

Smart Grid Ireland are broadly supportive of the Energy Data Taskforce (EDTF) recommendations being made applicable in NI.

We understand that NIE Networks are already part of the 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 are already working on the development of a digitalisation strategy and the new IT Strategy is centralised on streamlining, consolidating and integrating data with a view to it being made more open and easier to use in the future. Data informatio and data analysis management will be essestial to operating a digitalised energy system efficiently and effectively.

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.

Whilst SGI agrees that 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 will require a licence and/or legislative changes where customers have not given consent to disclose information. As is normal practice, when legislation and licence changes take place in GB, these 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. 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.

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.

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. 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: Do you agree that a Cost Benefit Analysis of smart meters should take into account the broader benefits they can bring to consumers as an enabler of energy data and a smart system? If the CBA for smart meters is not positive, what alternative approaches can be taken to deliver these benefits for consumers?

Yes

If the Cost-Benefit Analysis for smart meters is not positive, please outline below on what alternative approaches can be taken to deliver these benefits for consumers?:

International evidence says that, if the analysis properly accounts for all future benefits, it will deliver a positive result.

a) It is important in any CBA to consider the broader consumer benefits that can be less directly obtained via the network benefits arising from smart metering customer point data.

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 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

If "yes", what should this support look like? Please outline below.

SGI view is that it more important than simple direct grant assistance are enhanced tariffs for output from such systems and support for “project enablers” who can make projects happen; this to include funding of work towards removing barriers to implementation.

It is important that we encourage active participation in the energy markets and encourage 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.

It is important also that any additional generation connecting to the network is notified to SONI / NIE Networks.

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

If "yes", outline below what principles do you believe should be adopted in distributing future network costs across consumers?:

Equity. Customers' services needs must be properly evaluated and network costs appropriately allocated. The MIC approach is a crude if understandable tool to help protect networks; it should be replaced with one which recognises the role of technology in managing demand. The current relevant project work within NIE Networks should be facilitated and expanded, after consideration of such work in other jurisdictions.

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 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 may deter many domestic customers from adopting LCTs. 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. Furthermore, Ofgem is currently considering reducing or removing entirely any network reinforcement costs included in charges applied to customers connecting LCTs.

The thinking being that such a change in policy would reduce barriers to small users adopting LCTs. In RoI, a proportion of the cost of connection is socialised. The current charging mechanism may deter many domestic customers from adopting low carbon technologies and indeed can deter inward investment through Northern Ireland being

uncompetitive with neighbouring jurisdictions. Smart Grid Ireland 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.

As an example, Finnebrogue, the UK's leading artisan 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 and such 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.

Customers need to know and have options on how they connect to the network and to utilise innovation to connect 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.

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

If "yes", outline below what consumer protection measures should be part of this?

SGI suggests that these should evolve through facilitated engagement of discussions with all interested parties. 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

If "yes", outline below what support is needed to progress these?:

Recognition that such communities are not simply a sub-category of energy customers, but holistic systems involving prosumers who can supply energy and system services.

That there are only a couple of functioning community energy concerns in NI, when many thrive in other jurisdictions, is an indictment of the barriers faced by such interested parties.

Support for trusted intermediaries to research the workings of energy communities in other jurisdictions should be provided.

This should be followed up by examination of AER, RESS, CfD, ROC and other relevant tariff mechanisms to see how they could benefit the implementation of community energy projects

o SGI understands that 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

o NIE Networks' role is to provide a connection to all energy projects, whether they are community-driven, large-scale, private or public. NIE needs to ensure that they have an electricity network that can cater for all demand;

o Smart Grid Ireland 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;

o 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;

o There is a role for community projects in overall decarbonisation, but, ultimately, to really make the difference required, large scale projects are required;

o The NIE Networks FLEX project creates a financial stimulus to encourage community energy schemes to propagate. FLEX project is technology agnostic and doesn't rule out size – with aggregators and community schemes welcomed to participate.

o RP7 should incorporate 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

If "yes", outline below what applications do you believe there are for geothermal energy in Northern Ireland?:

Both "deep geothermal " and "shallow geothermal" projects will be viable in NI. Initial mapping shows this. However, before any commercial development could happen in NI 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 properly 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

If "yes", please outline below what key issues do you think should be tested through these?:

• Local heat networks are reasonably underdeveloped in NI 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 NI – 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 can produce harmful emissions with fuel sources. Organic household and agricultural waste can be used in AD plant to produce biogas / Methane 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. It would be appropriate for NI to provide some limited financial support to perform feasibility studies and limited trials to assess potential in NI. Smart Grid Ireland is currently facilitating one such feasibility study with Queens University for both zero carbon heating and cooling network system with electrical generating up to 5MW decarbonised electrical power also available from the system. Such systems have been installed in Denmark and Finland.