Energy Strategy Call for Evidence

Response Template

How to Respond

This template replicates the questions asked in the Call for Evidence found at: https://www.economy-ni.gov.uk/energy-strategy-call-for-evidence

It is recommended that you should read the full consultation document before completing your response. Please note that the text boxes used throughout this template can be expanded to accommodate your response – there is no character limit.

For further information on how we handle your personal data please read our Privacy Notice

Early responses are encouraged but all responses should arrive no later than **5pm on 20 March 2020.**

Please send your response to:

energystrategy@economy-ni.gov.uk

Or alternatively by post to:

Energy Strategy
Department for the Economy
Netherleigh
Massey Avenue
Belfast
BT4 2JP

Quote the reference "**Energy Strategy Call for Evidence 2019**"

1. General Information

1. **Name (required)**

[redacted]

2. **Are you responding:**

   ☐ **as an individual (please complete 3 to 5 below)**

   ☐ **on behalf of an organisation / company (please complete 6 to 8 below)**

If you are responding as an individual:

3. **E-mail address**

4. **Address**

5. **If you are responding as an individual, please read the Privacy Notice and tick the statement below as applicable.**

   ☐ **All responses will be published on the Department for the Economy website following completion of the Call for Evidence process. Please tick if you are content for your name to be published alongside your response.**

If you are responding on behalf of an organisation / company:

6. **Organisation / Company**

ESB Generation and Trading

7. **Position within Company / Organisation**

[redacted]

8. **Contact details**

   a. **E-mail address**

[redacted]

   b. **Address**

[redacted]

2. Energy in Northern Ireland

Q1. What lessons can we learn from elsewhere in addressing energy within an overarching climate action framework?

Q2. What are the key considerations for decarbonising Northern Ireland's energy sector given existing linkages to other jurisdictions?

Q3. To what extent should Northern Ireland implement the key energy-related recommendations from the CCC 'Reducing Emissions in Northern Ireland' report?

Q4. Do you agree with the 30-year timeframe? If not, please state your preferred approach and reasons.

Q1. What lessons can we learn from elsewhere in addressing energy within an overarching climate action framework?

The following are useful guides to addressing long term energy policy:

- The CCC report on Reducing Emissions in Northern Ireland[1]
- European Green Deal[2]

Q2. What are the key considerations for decarbonising Northern Ireland's energy sector given existing linkages to other jurisdictions?

Energy Wide Key Considerations:

1. **Encourage Energy Efficiency:**

Energy policy should promote energy efficiency across all sectors. Minimising energy consumption is key to reducing carbon emissions. Energy efficiency measures also minimises the need to invest in decarbonised energy technologies and infrastructure.

2. **Encourage Sector Coupling to Minimise Costs to the Consumer**

Minimising cost to the consumer is a key consideration in the transition to a decarbonised economy by 2050.

Energy efficiency combined with sector coupling will ensure maximum value is extracted from investments and will minimise "investment on the double".

Many bodies have acknowledged that investment in electricity infrastructure, when coupled with electrification of heat and transport can maximise value for the consumer[3].[4]

[1] https://www.theccc.org.uk/publication/reducing-emissions-in-northern-ireland/
[2] https://ec.europa.eu/info/files/communication-european-green-deal_en
[3] https://ec.europa.eu/info/files/communication-european-green-deal_en
[4] https://www.theccc.org.uk/publication/reducing-emissions-in-northern-ireland/

Power Sector Key Considerations:

- **Set a renewable electricity targets for Northern Ireland for 2030, followed by a carbon budget target thereafter:**

  Northern Ireland should consider setting a renewable electricity target of 70 % by 2030 for power sector. This RES-E target has been considered in SONI's TES NI Scenario 3: Addressing Climate Change[5]. Both Northern Ireland and RoI have the same RES-E targets for 2020 (40 %), and this harmonisation of targets should continue to 2030.
  SONI along with EirGrid are working to increase the system non-synchronous penetration (SNSP) limits above the current 65 %.
  Having similar RES-E penetration in NI and RoI will prevent distortions in the transmission system and will ensure the consumer gets maximum value from higher volumes of intermittent renewable generation.
  Carbon budgets will be key to decarbonising the electricity sector, and should be considered as a means to drive further decarbonisation post 2030.

- **Maintain SEM as a means to Deliver an Efficient Electricity Sector:**

  SEM has seen the benefits of combined solutions to the provision of capacity and system services to the power sector. System services have been a key component of delivering 65 % SNSP to SEM. The Capacity Remuneration Mechanism (CRM) has been key to ensuring adequacy of the electricity system in SEM.
  SEM has brought benefits to the consumer in the form of competition for new and existing capacity and for power security and reliability. SEM also provides a level of certainty to market participants. SEM has also resulted in a reduction in wholesale electricity prices which results in lower retail prices.
  Market participants have responded to provide innovative solutions to accommodate more and more intermittent renewables. This innovation should be developed and encouraged to 2030 and beyond, particularly in the provision of system services to increase the SNSP limit beyond the current 65 %.
  Given these benefits, policy decisions that create distortions in SEM and/or uncertainty to investors should be avoided.

- **Encourage Sector Coupling Through Electrification of Heat and Transport**

  Northern Ireland should strive to extract the maximum value from a decarbonised power sector for the consumer.
  Should NI set a target of 70 % renewable electricity by 2030, the benefits of decarbonising the electricity sector can be transferred to the heating and transport sectors through electrification. As more and more renewable electricity is developed, it is prudent to extract maximum value from this investment.
  SONI's TES NI 2019 provides a reference for sector coupling in the form of a forecast for the electricity demand associated with the uptake of heat pumps and electric vehicles in the Addressing Climate Change Scenario.
  Electrification of the heat and transport sectors can utilise renewable electricity that may have otherwise been curtailed. Electrification of heat and transport also minimises multiple investments in different sectors and can ensure that investment in one sector is transferred into other sectors for the benefit of the consumer. Every premises in NI has an electricity supply and can therefore avail of the benefits of a decarbonised power

[5] http://www.soni.ltd.uk/media/documents/TES-NI-2019-Consultation.pdf

sector. The use of smart technologies in the electricity sector can assist with load flattening, enabling generation and demand to be better matched.

Consider the Role of Gas to 2050:

Gas fired power generation accounts for 55 % of natural gas consumption in Northern Ireland.

As more renewable electricity generation is installed, the volume of electricity produced from gas generators will decrease and with it the volume of gas consumed in Northern Ireland.

Northern Ireland therefore needs to determine the role of gas to 2050. If dispatchable gas generation is required, then a pathway to decarbonise the gas system needs to be outlined. This pathway should consider:

- The composition of the decarbonised gas
- The timing of decarbonisation of the gas
- How the decarbonised gas consumed in NI will be integrated with gas supplied through the interconnector
- The transition from the existing fleet of generators that consume natural gas to a fleet that can burn the decarbonised gas. This transition applies to all gas appliances / users.

Biomethane and power to gas technologies offer low and zero carbon alternatives to natural gas. The ability to scale production and to store renewable gas remains a challenge.

A key consideration for the gas system is to make least regrets decisions for renewable gas consumption in the transition to 2050.

Q3. To what extent should Northern Ireland implement the key energy-related recommendations from the CCC 'Reducing Emissions in Northern Ireland' report?

The CCC report is an appropriate guide to developing energy policy in Northern Ireland. ESB GT agrees with many of the recommendations made in this report for the power sector including:

- Develop a competitive support mechanism for low carbon generation
- Develop incentives for flexibility options (e.g., DS3)
- Develop energy efficiency policies across all sectors
- Electrify heat and transport and develop the electricity system to support electrification
- Encourage behavioural changes
- Maintain SEM as means to encourage innovation and prevent market distortions between North and South.
- Consider the role of CCS as a means to decarbonise electricity
- Lay the groundwork for full decarbonisation post 2030 in the years between now and 2030.
- Identify the role of gas and how it can be decarbonised.

Q4: Do you agree with the 30-year timeframe? If not, please state your preferred approach and reasons.

Many jurisdictions are working towards a net zero emissions pathway by 2050. ESB GT agrees that the 30-year timeframe proposed in this call for evidence is appropriate.

ESB GT also agrees with the proposal from the CCC to set intermediate targets to 2050. Carbon budgets are an appropriate means of setting sector targets and of providing evidence-based benchmarking against these targets.

Research into decarbonisation pathways to 2050 have been published by Eurelectric and Bloomberg BNEF.

Eurelectric's Decarbonisation Pathways, outlines a pathway to decarbonise the power sector by 2045[6]. In the report, they state that decarbonisation of other sectors of the economy (e.g., heating and transport) can be achieved by rapid decarbonisation of the electricity sector by 2045. The report also states that at least 60% of the EU's economy should be electrified by 2050 to achieve 95% GHG emission reduction versus 1990 levels.

According to the study's findings, cost-effective pathways to 2045 will depend on the following:

- Electricity supply with over 80% from renewables
- Diversification of power sources to ensure system reliability and flexibility
- Changing role of conventional generation, which will provide back-up energy while gradually being less used for energy production
- Maturity of CO_2 offset and power-to-gas technologies.

In addition, Bloomberg BNEF have recently published a report outlining that the electrification of transport, buildings and industrial sectors in Europe could cut greenhouse gas emissions from those sectors by 60 % between 2020 and 2050[7]].

DfE should assess the ability to decarbonise the power sector by 2045 as part of this Call for Evidence.

[6] Eurelectric Decarbonisation Pathways

[7] Bloomberg Sector Coupling Report

3. The Energy Transition in Northern Ireland

Q5. What are the unique characteristics of Northern Ireland that need to be considered in a net zero carbon energy transition?

Q6. Is your organisation undertaking or planning to undertake projects to support the energy transition? If so, please provide further details.

Q5. What are the unique characteristics of Northern Ireland that need to be considered in a net zero carbon energy transition?

ESB GT considers that the following are key unique considerations for Northern Ireland:

1. Northern Ireland is part of an Island Electricity Market with Limited Interconnection:

SEM has taken a common approach (NI and RoI) to deliver capacity and system services that are key to enabling 65 % SNSP on the island of Ireland.

This approach has worked for the benefit of the consumer while also providing certainty to market participants. SEM should be retained as a market model for the power sector.

Clarity on the role of system services post 2025 is required to encourage investment and to enable the % SNSP to increase in line with increased renewable electricity penetration.

2. Security of Supply

As Northern Ireland transitions to a low carbon economy, Security of Supply becomes a key consideration.

Electricity will be a key diver of all economic activity in the 30 years to 2050. As electrification of the heating and transport sectors increases, so too does the need to ensure the electricity sector is resilient and robust.

As solid fuels are phased out of the power generation sector, Northern Ireland will rely on imported gas, wind and limited interconnection as primary energy sources. The role of gas generation in the power sector therefore needs consideration, along with CCS as a means to produce low carbon generation from gas.

The development of the North/South interconnector will increase electricity security both North and South of the Border and is a welcomed development. In addition, SEM has provided capacity certainty on an all-Ireland basis.

Continued diversification of the renewable generation technologies in Northern Ireland should be considered as a means to ensure resilience in the power sector.

Energy storage will be required for periods of low volumes of intermittent power generation and to maximise the usage of power during periods of high intermittent renewable generation.

Security of supply will be addressed further in Section 9.

3. **A Dispersed, Rural Population:**

As outlined in the consultation document, NI has a large rural population, many of whom do not reside adjacent to the gas grid and make many journeys by ICE vehicles. While these factors can make decarbonisation of heat and transport more difficult, they also create opportunities.

For example, rural homes currently heated by oil can be easily converted to electric heat pump technologies when combined with energy efficiency upgrades. Converting from internal combustion engines to EV's is also an appropriate technology for these rural populations where public transport does not meet transportation needs of a dispersed population.

Electrification of heat and transport can benefit from investment in decarbonising the electricity sector. An electrified heat and transport sector can decarbonise sections of the population where technologies like district heating and increased use of public transport are not suitable solutions.

4. **The role of gas in the transition to 2050:**

Northern Ireland's gas infrastructure is a very effective means to provide energy for conversion into electricity, to heat homes and to power industry. A net zero economy by 2050 cannot rely on unabated gas combustion. Northern Ireland imports gas via GB and therefore decarbonisation of the NI gas supply needs to include a consideration of the role and composition of gas in GB.

A key consideration is to make least regrets decisions for renewable gas production and consumption in the transition to 2050.

Biomethane and power to gas technologies offer low and zero carbon alternatives to natural gas, however scale of production and storage are current limitations of these technologies.

CCS also warrants consideration in the final role of the gas system and will be discussed later in this response.

Q6. Is your organisation undertaking or planning to undertake projects to support the energy transition? If so, please provide further details.

Yes, ESB GT's 2030 Brighter Future strategy outlines how ESB GT will transition away from solid fuels and will develop more and more renewables in the period to 2030[8].

Examples:

ESB GT will transition away from solid fuels for electricity generation, firstly peat at the end of 2020, followed by the cessation of coal generation at Moneypoint by the end of 2025.

In 2019 ESB GT commissioned Oweninny and Grousemount wind farms and has secured a share in the offshore wind farm, Neart na Gaoithe off the Scottish coast.

ESB GT's commitment to Northern Ireland includes 100 MW of installed wind generation in addition to 455 MW of gas and distillate generation at Coolkeeragh. In addition to providing capacity, ESB provides system services, a key enabler of 40 % intermittent renewable electricity.

Should NI introduce a new competitive scheme to support new renewable electricity development, ESB GT indents to participate in the scheme.

ESB GT intends to continue to innovate in the electricity market, providing decarbonised electricity solutions to the heat and transport sectors.

[8] ESB Brighter Future Strategy
ESB Dimensions of a Solution Report

4. Consumers

Q7. How should we ensure that energy remains affordable for domestic consumers? What approach should be taken to eradicate fuel poverty?

Q8. What steps could be taken to improve the relative cost competitiveness of larger non-domestic consumers?

Q9. Is a strategic position of "enable and protect" the correct policy stance?

a) What policies or schemes are needed to enable active consumers?
b) What policies or schemes are needed to protect vulnerable consumers?

Q10. What types of advice and information are required by all consumers and what are the best mechanisms for facilitating this?

Q11. Are there examples of successful citizen energy projects in Northern Ireland and elsewhere that have delivered improved energy efficiency and/or clean energy to local communities?

Q12. What opportunities are there in both urban and rural areas for citizen energy communities in Northern Ireland? What role could government have in facilitating these?

Q13. What evidence can you provide that identifies the challenges and opportunities for NI energy consumers in decarbonising energy?

General Comments

ESB GT considers that the key principles to guide the decarbonisation of Northern Ireland's economy while delivering value to the consumer are:

1. Minimise energy consumption through the implementation of policies to encourage energy efficiency.
2. Energy from renewable sources is a premium product and its usage should be maximised. This can be done by creating new demand for renewable power consumption in the heating and transport sectors through electrification. SONI's Addressing Climate Change Scenario in the TES 2019 suggests that up to 1.1 TWh of additional electrical demand could be attributed to electrification of heat and transport by 2030
3. Enable smart usage of power, to enable load shifting and flattening, creating a more stable demand profile that maximises use of renewable energy.
4. Consider developing energy storage technologies to compliment the development of renewable energy generation technologies. Storing excess renewable power for use during periods of low generation will provide resilience to the power system and will optimise the investment in renewable power technologies for the benefit of the consumer. Storage technologies include batteries, power to gas and pumped storage.

These principles are expanded further in the Power Section of this response.

5. Energy Efficiency

Q14. What, if any, energy efficiency target or targets should be set for Northern Ireland?

Q15. How should we define, measure and monitor energy efficiency to optimise its potential in our homes, business, economy and environment?

Q16. What are the most important policy levers for government to ensure zero carbon in:

a) New domestic and commercial buildings by 2050?;
b) Existing domestic and commercial buildings by 2050?

Q17. What should the future of energy efficiency support look like and who should be the key delivery bodies?

General Comments:

ESB GT considers that policies should be established to ensure

1. Energy consumption is minimised through energy efficiency policies
2. New buildings should be constructed using a least regrets approach to energy usage and efficiency.
3. Energy from renewable sources is a premium product and its usage should be maximised. SONI's Addressing Climate Change Scenario in the TES 2019 suggests that up to 1.1 TWh of additional electrical demand could be attributed to electrification of heat and transport by 2030
4. Enable smart usage of power, to enable load shifting and flattening, creating a more stable demand profile that maximises use of renewable energy.

6. Heat

Q18. What is the appropriate pathway and timeline for the decarbonisation of heat between now and 2030, and subsequently to 2050?

Q19. What are the appropriate ways to measure the progress of decarbonising heat?

Q20. What are the most cost-effective and sustainable steps that government might take to accelerate the reduction of the carbon intensity of heating fuels?

Q21. Is decarbonisation of the gas grid a viable option and what evidence can be provided on both the speed and affordability of decarbonising the gas grid?

Q22. What evidence can you provide on the opportunities for district heating schemes in Northern Ireland and where should responsibility lie for facilitating these?

Q23. Can you provide any evidence or information on the opportunities for geothermal heat supply?

General Comments:

ESB GT proposes the following to decarbonise the heating sector in Northern Ireland:

1. Eliminate the use of solid and fossil fuels for heating purposes early.
2. Invest in energy efficiency measures: The primary means to reduce emissions from the heating sector should be through a reduction in energy demand and the deployment of energy/carbon efficient technologies (e.g. Heat Pumps)
3. Shift the primary source of heating away from fossil fuels (e.g., heating oil) to a lower carbon source of heat e.g., electricity supplying a heat pump. In this way, the benefits of investment in the electricity sector can be utilised by the heating sector. Electrification of heat also provides benefits to the electricity sector by increasing electrical demand. An increased electrical demand will result in reduced curtailment of intermittent renewables, thereby ensuring the investment in renewable electricity delvers maximum value to the consumer.

7. Power

Q24. What is the appropriate pathway for the decarbonisation of power from now to 2030, and subsequently to 2050?

Q25. What target for electricity consumption generated from renewable sources by 2030 is ambitious, achievable and affordable?

Q26. How can the new infrastructure necessary to meet a new renewable electricity target be delivered in a timely, affordable and acceptable way for consumers and society?

Q27. What innovations and solutions could contribute to meeting a new renewable electricity target?

Q28. What market incentives and support are necessary for investors to deliver the investment in renewable generation assets at a scale that will achieve a new renewable electricity target?

Q29. What steps need to be taken by Government to facilitate investment in offshore and marine renewables for NI?

General Comments:

ESB Generation and Trading consider the following to be key requirements to deliver a decarbonised power sector at minimal cost to the consumer:

1. **Set a renewable electricity target for 2030 that is ambitious and consistent with the roadmap to achieving net zero carbon emissions by 2050.**

   - A target of 70 % of electricity generated from renewable sources by 2030 is an appropriate target and is consistent with other jurisdictions. A 70 % RES-E target has been considered in SONI's TES NI Scenario 3: Addressing Climate Change. This scenario is aligned with a whole system approach to decarbonisation
   - Prepare a scheme to incentivise the development of new renewable generation that builds on the previous successful NIRO scheme. Ensure that the scheme is competitive and delivers value to the consumer, acknowledging the likely fall in the cost of development of new renewable generation over time. ESB GT considers that the CCC recommendation to develop a scheme specific for Northern Ireland is appropriate.
   - Develop energy policy in parallel with a renewable support mechanism that is both consistent and predictable to enable investment in new renewable electricity generation capacity. Figure 2.5 of the Committee on Climate Change report "Reducing Emissions in Northern Ireland" is an appropriate policy framework for DfE to implement to enable the development of new renewable generation in Northern Ireland.

2. **Continue to use SEM as a means to support new renewable generation.**

   - Ensure that the co-operation and innovation that SEM has brought to the electricity market continues.

- Provide policy that enables the amount of SNSP (system non synchronous penetration) to increase from the current 65 % to 95 % over time.
- Avoid SEM market distortions that could lead to an over investment in one jurisdiction over another, putting the cost burden disproportionately onto those consumers within that jurisdiction.

4. Ensure that the power sector is robust, reliable and secure.

- System services (e.g., DS3) and energy storage will be key to optimising the use of new renewable generation to 2030 and beyond. Certainty on the services required is required by service providers.
- Encourage innovation in the generation technologies that support intermittent renewable power such as high flexibility, fast response technologies, energy storage and a transition to renewable forms of dispatchable capacity
- Energy storage technologies can deliver long term value to the consumer by creating a demand for otherwise surplus intermittent renewable generation.

5. Adopt a least regrets approach to decarbonisation of the power sector, enabling the value of the investment to be captured over 30 years.

- Enable hybrid grid connections (e.g., wind/battery/dispatchable/power to gas technologies operating using a single electrical connection). Hybrid connections will maximise the utilisation of existing infrastructure and will minimise the need to invest in new infrastructure thereby providing value to the consumer.
- Encourage sector coupling early. Every premises in NI has an electrical connection. The supply of decarbonised power to all customers can enable the decarbonisation of the heating and transportation sectors at minimal cost to the consumer. Electrification of heat and transport also increases demand for electricity and therefore finds a useful use for renewable power that would otherwise have been curtailed.

6. Invest in a smart electrical system that can enable demand to flex in response to electricity production.

- Smart power usage will enable demand and generation to be optimised. Flattening the daily demand profile will better match power generation to consumption and will optimise the consumption of intermittent renewable generation.

Q24. What is the appropriate pathway for the decarbonisation of power from now to 2030, and subsequently to 2050?

An appropriate pathway to decarbonise the power sector should include:

1. Develop a new support scheme to encourage the development of new renewable generation to build on the NIRO scheme. 70 % RES-E by 2030 has been suggested in this response as an appropriate target. Consideration should be given to a sift to a carbon budgeting scheme to drive decarbonisation post 2030.
2. Ensure that appropriate system services are supported to enable the transition form 65 % SNSP to 95 % SNSP.
3. Enable hybrid grid connections e.g., wind/battery/dispatchable/power to gas technologies operating using a single electrical connection. Hybrid connections will minimise the need to invest in new grid infrastructure to facilitate new renewable generation.

4. Define the role of natural gas in the journey to 2050. As more and more renewable generation is installed, the role of dispatchable generation will be to support to renewable generation and the system rather than in the provision of bulk power.
5. Develop an energy efficiency framework to minimise the need to develop excessive volumes of new renewable generation.
6. Encourage sector coupling early. Sector coupling will leverage the ability to decarbonise the electricity sector into other sectors. For example, electrification of heat and transport can benefit from the decarbonisation of the electricity sector at minimum cost to the consumer.

The above measures have been considered in the European Green Deal which states "the smart integration of renewables, energy efficiency and other sustainable solutions across sectors will help to achieve decarbonisation at the lowest possible cost".

Q25. What target for electricity consumption generated from renewable sources by 2030 is ambitious, achievable and affordable?

- A target of 70 % renewable electricity for NI by 2030 is consistent with what other jurisdictions are targeting. Setting similar targets within NI and RoI will avoid SEM market distortions that could lead to favourable investment conditions in one jurisdiction over another, putting the cost burden disproportionately onto those consumers within that jurisdiction.
- It is important that the renewable electricity target is supported by firm policy and a new support scheme for renewable generation specific to Northern Ireland to enable investment and to achieve the target at minimal cost to the consumer. ESB GT suggests a NI specific support scheme be established to support the development of new renewable generation.
- SONI has recently consulted on the Tomorrows Energy Scenarios for Northern Ireland. The Addressing Climate Change scenario is a useful guide to how 70 % RES-E can be best optimised
- The new renewable electricity target for 2030 should transition to a carbon budgets and gCO2/kWh targets after 2030.
- To minimise cost to the consumer, DfE should:
    - Enable hybrid grid connections to maximise the use of an electrical connection while minimising the need to develop new infrastructure
    - Leverage the scale that SEM can bring in providing solutions to enabling high amounts of renewable electricity generation to be utilised.
    - Develop energy efficiency policy to minimise consumption

Q26. How can the new infrastructure necessary to meet a new renewable electricity target be delivered in a timely, affordable and acceptable way for consumers and society?

- Develop a new Renewable Electricity Support Mechanism to achieve the 2030 renewable electricity targets.
  In 2020, Northern Ireland has achieved a very ambitious target of > 40 % renewable electricity. DfE should therefore review the structure of previous support schemes, select the parts that worked will and build on these for future schemes. The CC

report also provides some solutions to the make-up pf a new renewable electricity incentive scheme and these should also be considered. ESB GT suggests a NI specific support scheme be established to support the development of new renewable generation. The scheme should include deadlines for delivery of new renewable generation to ensure the target can be met.

- Enable hybrid electrical grid connections as discussed above.
- Encourage sector coupling early as discussed above.
- Engage and Involve the community in renewable electricity technologies: Communities have a central role to play in the future power system. Many communities want to be part of the decarbonisation agenda but have limited in opportunity to do so.

Q27. What innovations and solutions could contribute to meeting a new renewable electricity target?

- Hybrid grid connections, as discussed above can provide efficient solutions to developing new grid infrastructure to enable new renewable electricity investment.
- The development of new renewable generation will require that the SNSP limit is increased proportionately. The role of system services will be key to enabling higher amounts of intermittent renewable generation. Clarity on the system services market is required to enable service providers to innovate and provide service solutions to accommodate new renewable generation on the system.
- Creating new demand for intermittent renewables will help match the supply and demand of renewable generation. SONI have indicated that 70 % RES-E can be supported by an increased demand by electrification of heat and transport. Sector coupling, as described above should be utilised where possible, to maximise the decarbonisation of all sectors.
- Smart power usage will enable demand and generation to be optimised. Flattening the daily demand profile will better match power generation to consumption.
- Innovation is needed in energy storage solutions. As more renewable generation is installed, there will be periods of high power generation but low demand. This power should be captured for use when power is in high demand (e.g., the evening peak, periods of low wind etc).

Q28. What market incentives and support are necessary for investors to deliver the investment in renewable generation assets at a scale that will achieve a new renewable electricity target?

CCC Report outlines policy options to decarbonise the power sector. Policy Option 2 suggests the introduction of a competitive, long term support mechanism for low carbon generation. The report states that new renewable electricity generation will not be developed in Northern Ireland following the closure of the NIRO scheme and in the absence of a new scheme.

ESB GT considers that the CCC recommendation to develop a scheme specific for Northern Ireland is appropriate. A key feature of the scheme should be to avoid inadvertent North/South market anomalies that could make one jurisdiction more/less competitive than the other.

There are various means to support new renewable electricity generation. ESB GT suggests that DfE should review the structure of previous NI, UK, RoI and European support schemes, select the parts that worked well and build on these for future schemes.

Q29. What steps need to be taken by Government to facilitate investment in offshore and marine renewables for NI?

Offshore wind technologies offer the ability to develop new renewable electricity generation at scale. Offshore wind in Northern Ireland should be considered as part of the diversification of renewable electricity generation technologies. The decision by the Crown Estate not to progress with the development of offshore sites in Northern Ireland should be reassessed in the context of this 2050 Energy Strategy.

Combining offshore wind generation with hybrid grid connections as described above could allow for offshore wind to be landed into an existing grid connection, thereby maximising the use of existing infrastructure.

Offshore wind can provide significant economies of scale in terms of the development cost of large projects and the high load-factors associated with the technology. Consideration needs to be given to scale of offshore wind development relative to the cost to the consumer.

8. Transport

Q30. What would be an appropriate pathway to decarbonised energy for transport to 2050?

Q31. What role should active travel have in the decarbonisation of the transport sector and what should government do to support this?

Q32. What energy infrastructure is needed to facilitate the uptake of electric vehicles in line with UK Government's 'Road to Zero' targets?

Q33. How will transport integrate with other energy uses (e.g. homes with solar generation, battery storage, EV charging) and what can government do to optimise the opportunities represented by this integration?

Q34. To what extent can alternative low carbon transport fuels contribute to decarbonisation of the transport sector?

Q35. Do you have any data/research to help inform and reduce the carbon intensity of our transport energy in order to achieve net zero carbon by 2050?

General Comments on Transport:

A transport decarbonisation pathway should be developed that aligns with decarbonisation of the electricity sector. For example, the development of the electricity grid to allow more and more renewables onto the system should happen in parallel with the planning for development in electrical charging infrastructure to ensure so that the cost of electrical infrastructure development is not duplicated.

- Electrification of the transport sector can avail of investments made in renewable electricity at the benefit of the consumer. Sector coupling, as described in the Power Section above should be utilised to enable the decarbonisation of Transport.
- Every premises in NI has an electricity connection. As more renewable electricity is generated, efforts should also be made to shift electricity demand through electrification of heat and transport in order to maximise the usage of renewable electricity.
- Hydrogen or fuel cells appear to be an ideal technology to provide renewable energy to heavy transport such as buses, HGVs and rail. The hydrogen generated should be green hydrogen where possible. Green hydrogen, as with electrification of transport enables the use of renewable electricity that would otherwise have been curtailed to find a use in another sector, in this case transport.
- Converting heavy vehicles to LNG or CNG risks locking in fossil fuels for the lifetime of the re-fuelling infrastructure and for the lifetime of the fleet converted to CNG/LNG. Investment in LNG/CNG will likely require further investment in a renewable fuel supply by 2050, thereby requiring “investment on the double”.

9. Other Issues:

a. Security of Supply

Q36. What specific risks to security of energy supply are likely to emerge as a result of our changing energy mix, and what actions can be taken to mitigate these?

Q37. What measures or indicators could be adopted or developed to monitor energy security of supply?

General Comments:

SEM:

To date, SEM has provided all Ireland solutions to the power sector in the form of capacity and system services. Both of these measures are related to the security and reliability of the electricity system.

For a future decarbonised electricity system, the value of a harmonised SEM approach to the electricity system should be maintained as it represents the optimum means to ensure value to the consumer through scale.

The role of gas in the transition to 2050:

Gas fired power generation accounts for 55 % of natural gas consumption in Northern Ireland.

As more renewable electricity generation is installed, the volume of electricity produced from gas generators will decrease and with it the volume of gas consumed in Northern Ireland.

Northern Ireland therefore needs to determine the role of gas to 2050. If dispatchable gas generation is required, then a pathway to decarbonise the gas system needs to be outlined. This pathway should consider:

- The composition of the decarbonised gas
- The timing of decarbonisation of the gas
- How the decarbonised gas consumed in NI will be integrated with gas supplied through the interconnector
- The transition from the existing fleet of generators that consume natural gas to a fleet that can burn the decarbonised gas. This transition applies to all gas appliances / users.

Biomethane and power to gas technologies offer low and zero carbon alternatives to natural gas. The ability to scale production and to store renewable gas remains a challenge.

A key consideration for the gas system is to make least regrets decisions for renewable gas consumption in the transition to 2050.

In the context of security of supply, NI should determine the amount of dispatchable generation required and the technologies used for dispatchable generation. If gas is required for dispatchable generation, then the composition of the gas needs consideration along with the hardware required to burn the gas.

Energy Storage:

Up to now, fossil fuels have provided energy storage in Northern Ireland. In a decarbonised economy, the form of stored energy and the volumes of stored energy required to provide energy security needs consideration.

As sector coupling occurs, e.g., the supply of renewable electricity to transport and heating sectors, consideration also needs to be given to the need for back up dispatchable electricity generation to supply energy during periods of low intermittent renewable electricity availability.

Potential solutions to energy storage include:

- Green hydrogen: Generate and store green hydrogen for use during periods of low intermittent renewable electricity generation
- Biogas production
- Battery storage

Increased electrical interconnection can also assist with the requirement for energy storage.

b. The Role of Data

Q38. What is the most cost-effective method of capturing consumer energy usage data in electricity and natural gas (where meters are in place)? In heating oil (where there is no metering obligation)?

Q39. What concerns need to be addressed regarding data privacy, security and/or ownership?

Q40. What are your views on applying the key recommendations of the Energy Data Taskforce for NI?

Q41. What organisations or businesses do you see as having a key role in optimising the value of data? How will they do this?

ESB GT supports the deployment of smart technologies in the power sector in order to flatten demand to better balance power production and consumption. The use of data to manage this demand flattening will be a key requirement.

c. Carbon Capture and Storage

Q42. What steps, if any, should NI policy-makers consider with regard to the development or implementation of CCS in NI?

CCS must remain as a consideration as a means to decarbonise large-scale power generation until a robust alternative emerges and the future of the gas grid for power generation is determined.

CCS may also provide a solution to heavy industrial and large users of energy (usually in the form of high temperature heat) that cannot be readily be decarbonised.

d. Energy and the Economy

Q43. What specific economic opportunities will arise from the decarbonisation of energy?

Q44. What skills are needed to realise the potential economic benefits of energy in the future?

Q45. What are your views on the future of overall energy demand in NI and how can we ensure that any potential demand growth aligns with our net zero carbon target?

e. Delivery Framework for an Energy Strategy

Q46. Do the existing division of responsibilities and powers across government enable the most effective approach to the overall aim of decarbonising energy? If not, what are your suggestions for improvement?

Q47. What are the opportunities for local government to contribute to the delivery of the net zero carbon target?

Q48. What are your views on how statutory duties and accompanying legislation and regulatory frameworks would need to change to facilitate the transition to net zero carbon by 2050?

Q49. Is there a need for a dedicated organisation to champion, lead and deliver sustainable energy interventions? If so, what should this look like?

10. Additional information

Q50. Is there anything else you would like to add in response to this Call for Evidence?

ESB GT welcomes the opportunity to contribute to a very ambitions and wide ranging Call for Evidence. The harmonised sector approach as outlined in the Energy Strategy is appropriate to the decarbonisation challenges that lie ahead.

Early planning is key to achieving a net zero carbon economy by 2050.

ESB GT's key contributions to this consultation are:

- Develop energy efficiency policies
- Develop a new NI specific support scheme for new renewable generation
- Maintain SEM as a means to deliver value and innovation in the electricity market
- Ensure that system services are maintained as a means to support more intermittent renewables. Clarity on the services required post 2025 is required
- Enabling hybrid grid connections will be key to optimising the use of electrical infrastructure at minimal cost to the consumer
- Identify the role of gas in NI to 2050
- Enable smart use of power. Smart power consumption and production will enable load reduction and load flattening to occur to maximise the use of intermittent renewables
- Enable energy storage to maximise the use of intermittent renewables
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