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)**

Paul McCormack

2. **Are you responding:**
   ✓ **As an individual (please complete 3 to 5 below)**

If you are responding as an individual:

3. **E-mail address**

[redacted]

4. **Address**

[redacted]

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.**

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 – NI can learn and share lessons with other EU countries in addressing energy within an overarching climate action framework. Denmark has recently been asked by the UN Secretary General to lead the way in promoting the transition of the energy sector towards sustainable energy at a global level. This is recognition of the Danish global climate engagement and development cooperation as well as their front-runner position within green transition. NI sustainability strategies should look to Denmark's transition models.

Q2 – It is essential to work in collaboration with other EU partners, as energy security needs to be guaranteed. It is essential the DfE energy policy is aligned with other countries policies especially Scotland and ROI. The key reason for this is that our Energy and Gas networks are fully integrated, energy interconnectors exist with the rest of the UK network and all movements are measured. This needs to be built upon and will give us competitive advantage.

Q3 – The targets should be as follows:

i. UK Net Zero by 2050 with transient targets for heat, mobility and transport before this end date
ii. NI should follow the lead of others including Scotland and aim for Net Zero by 2045
iii. Agree that we need clear and defined policies

Q4 – Agree with the 30 year timeframe however to ensure we meet the 2045 /2050 targets we need to set milestones and a transition period to move from fossil fuel through natural gas through to SMART H2
At a minimum there needs to be a review every 5 years to ensure all targets that will be set can be delivered.

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 – As NI is a 'small' interconnected energy system.it is essential that all Governmental Departments work together to deliver the Executive-agreed Energy Strategy as it impacts on Health (emissions), Economy (growth), Education (skills and training), Environment and so on. One example of how one Department can impact on others is the Education System – Manufacturing and Business need the Technicians and skilled workforce to construct, commission and maintain the equipment needed for a Renewable-driven future. This means bringing young people through the apprenticeship training route, ideally starting at 16 however the way in which Schools receive their budget (on a per pupil basis) means that Schools currently focus on their pupils staying on to do A-levels. The Education budget does not pay for pupils once they reach the age of 18. This means that the Further Education Colleges, and business, do not receive a budget for training, which is critical to delivering on Climate Action Plans and economic development.

As a small system, it is also essential we partner with our neighbours in Scotland, RoI, GB and Northwest Europe.

Q6 I work with several organisations and projects seeking to produce, enable and support the shift to SMART H2. These include Hydrogen Ireland, GenComm, SMART H2. GreenH2LINK, HAZEL and others.
These projects and collaborative partnerships are supporting and driving the transition to SMART H2, facilitating public and business awareness of the potential of SMART H2 and establishing a low carbon economy that will create new high-tech jobs and skill sets in all areas of society to enable the green economy.
For example GreenH2Link - Supplying a Green Hydrogen demand-orientated, decentralised, distribution and delivery system as a transnational
low-carbon solution for passenger and freight transport systems.

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?

Q7 – A competitive market with robust regulation will ensure customers receive the most appropriate and competitive price, and will ensure we remain one of the countries with the lowest energy costs in Europe. This has the potential to be the most effective way to reduce fuel poverty. Competitive energy will help grow the economy, which will provide higher value jobs.

Shared and the expansion of interconnected heating systems should also be considered.

Q8 – A robust competitive market already exists in Northern Ireland. With the right policy to increase the use of renewable energy, this will attract large multi-nationals into the NI economy.

Q9 – The use of intelligent meters, public education, informed consumers and the deployment of smart micro-grids will enable and protect" the correct policy stance.

a) In a mature competitive environment together with robust regulation the customer will be put first (when customer service and price are poor, the customer simply switches). A supply business cannot exist without customers.

b) Continuation of the NISEP (Norther Ireland Sustainable Energy Programme) will help protect vulnerable customers.

Q10 - A lot of data is included in electricity bills but data is not information. We need to assist consumers to make informed choices. The Consumer Council gives advice, but we need to establish an independent energy authority similar to the SEAI in ROI – the 'Sustainable Energy Authority of Ireland', who also provide green energy grants: https://www.seai.ie/

Q11 - 'Energy Cooperatives Ireland' support community-based renewable energy co-operatives, and guide citizens through the legal process of setting up a co-operative https://www.energyco-ops.ie/ One example of one of their community projects is Valentia Island's new hydrogen development project, VISION.

Q12 – There are key energy differences in both urban and rural areas and if we are to empower citizen energy communities in Northern Ireland we must be cognisant of these differences – it is not a one size fits all solution.

Q13 – Through renewable energy projects, studies and SMART H2 initiatives opportunities have been identified for NI energy consumers in decarbonising energy through my work including Generating Energy Secure Communities by empowering communities to be energy secure through renewable energy opportunities. However, there are many challenges including disseminating accessible information, de mystifying some of the hype, raising public awareness, reducing red tape hurdles, overcoming planning obstacles, achieving cost benefit realisation, tackling deregulation challenges. And many others if we are to reach carbon zero.

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?

Q14 – Energy Efficiency is key to ensure that every kWh is only consumed out of necessity. Energy waste needs to be targeted and reduced on a consistent approach. Poor insulation results in wasted energy from heating systems - all motors should have speed control (a 10% reduction in speed delivers a 28% energy saving). The target should be realistic and achieve long-term results. This should be set at circa 1.5% per year. Mechanisms are available to provide robust monitoring and reporting which can cover electricity, heat and transport markets.

Q15 – All energy consumption could be measured in kWh. This is not a simple calculation, but this should not be a deterrent or seen as difficult when trying to put the mechanism in place. It is also key that any new process runs in conjunction with high quality building regulations. New energy efficiency regulations could also be developed to ensure obligations.

Q16 Oil for heating must to be phased out. Gas has to be zero emission (i.e. Hydrogen, Bio Gas, and Bio-methane). Electric heat pumps are a viable alternative.
Also, the obligation for every new or renovated building to use BIM (Building Information Modelling) as a management process should be enforced. BIM is being leveraged by the EU as a means of reducing carbon emissions in the construction sector, and increasing energy efficiency in buildings.

Q17 – NI has led the way with the NISEP scheme; this scheme should be developed and enhanced. We also need to establish an independent energy authority similar to others in Europe including the SEAI in ROI – but this must be given strong support from the NI Assembly.

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?

Q18 – Tough decisions are now required to be made, these should include:

i. Natural Gas to be switched off by 2045
ii. Road to zero emission should include using the existing Gas Network Infrastructure, with incentives for injecting zero emission gas – to include: Hydrogen, Bio Gas, Bio Methane

Q19 /20– Homes must switch from fossil fuels. Air quality monitoring could be carried out and all areas with air quality issues should be targeted to remove and reduce heating from Oil and gas boilers, with zero emission Heat Pumps

Q21 – Yes – NI has a wind and wave resource, with research, that needs to be exploited. For example:

i. A 1,000MW off shore wind turbine in the North Sea combined with a 200MW tidal potential in the Irish Sea could be used to produce renewable Hydrogen Gas.
ii. All brown waste including grass cuttings could be utilised to produce AD Gas
iii. Hydrogen & CO2 can be used to produce Synthetic Methane.

Q22 – There is potential to use the Electricity Grid for District Electric/ Solar Heating by using smart grid controls, solar panels and heat pumps.

Q23 – There is real potential for Geothermal, however this infrastructure and technology will not be ready by 2050. To meet our CO2 reduction targets we need to act now, with the aim to use Geo Thermal post-2050. Further research is required.

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?

Q24 – We have reached 40% renewable energy on the electricity network. The following additional actions with targets will be required:

i. Complete and exhaust on-shore wind opportunities
ii. % to develop off-shore wind
iii. Targets for Wave opportunities
iv. Power to gas is key; Use Renewable Hydrogen Gas as a storage vector

Q25. 70% - provided Battery Storage projects are completed.

Q26 – Infrastructure is required and must be delivered. Competitive design and tendering have the potential to make it affordable and achievable, and ensure infrastructure is delivered in the most competitive way.

Q27 –

I. Renewable Hydrogen used in Fuel Cells for back-up generation;
II. Battery storage using EV's are a storage medium
III. Smart grid infrastructure ensuring all customers with EV's and battery storage can participate in the energy market;
IV. Development of Wave and Tidal generation (this is key to reaching 100% renewable)

Q28 Government Incentives are essential to deliver the investment. These could include a number of initiatives including being paid for by taking the carbon tax fines levied by the EU and using these to stimulate the market.

Q29 – Work with all initiatives and support mechanisms including Innovate UK to achieve a national solution, and take best practice and opportunities from GB and Europe. Joined up Government thinking is essential to ensure all sectors respond to the policy and share in the benefits.

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?

Q30 – The pathway should include all EU targets including the EU targets for the transport sector, include emissions, must be reduced by 30% by 2030 compared to 2005, equating to 51 million tons of fossil fuel having to be replaced.
NI must mirror Europe's answer to the emission reduction challenge in the transport sector delivering an irreversible shift to low-emission mobility.

i. Ban new Diesel vehicles by 2025
ii. Carbon Tax on fossil fuel, however monies collected must be directed into Renewables
iii. All petrol vehicles must be Plug-in Hybrid by 2025
iv. Ban petrol vehicles by 2030
v. Zero Emission Public Transport by 2035
vi. Commence studies into Renewable Ammonia (manufactured from Renewable Hydrogen) which could lead to the Marine fleet being 50% zero emission by 2040, and 100% Zero emission by 2050

Hydrogen Mobility Ireland have developed a strategy to outline their recommendations for the deployment of hydrogen for transport entitled: "A hydrogen roadmap for Irish Transport: 2020 - 2030" http://hydrogenireland.org/wp-content/uploads/2019/10/HMI_report_final_Oct3rd2019-2.pdf

Q31 – Customers will embrace active travel only when the personal desire and motivation is there. For many, it would only be adopted if a ban on cars entering towns and cities was brought into force, but for those commuting active travel is not really an

option and therefore alternative lower carbon options such as public transport need to see ongoing improvements, in terms of both emissions and an efficient service.

Q32 – A Smart Electricity Network will be able to cope with the additional capacity required to charge Electric Vehicles however NIE need to quantify and qualify the required Electricity Network Infrastructure.

Q33 – Government should facilitate the smart grid infrastructure ensuring customers can actively participate in the DSR, iSEM markets. This would open up potential for domestic and small commercial customers to enter contracts with suppliers, to pool and combine these customers to form a substantial flexible demand for the energy market.

Q34 – Low carbon alternatives including CNG should only be seen as an interim measure. The gas companies have to be incentivised to move to zero carbon. This can be achieved with a blend of Hydrogen, Bio Gas and Bio Methane. Renewable Ammonia has the potential to deliver a zero emission solution for the freight and Marine industry, as this is a viable solution for trucks and ferries.

Q35 –The Belfast Met-led GenComm renewable hydrogen project is delivering an online ‘Decision Support Tool’ for stakeholders and communities. It will identify green hydrogen supply sources, and demonstrate the potential of the hydrogen market.

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?

Q36 – Security of Supply has and always will be the key priority for any System and Network Operator. These Operators within NI and ROI have the experience and expertise to ensure security of supply within our changing energy mix. Being able to control our own supply chain would be one mitigating action, without the need to import energy.

Q37 – As stated above, our existing grid operator has the required experience to deliver robust measurement and monitoring. SONI and NIE should be given the necessary resources to ensure delivery of a robust and secure Network.

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?

Q38 – Through imposing obligations on companies.

Q39 – Modern systems are secure so this will be low risk.

Q40 –

1) We agree that existing legislation can be used to ensure the energy sector adopts the Digitalisation of the Energy System.
2) We agree that data should be presumed open, discoverable, searchable, understandable with common structures
3) Visibility of data – we do not believe visibility of data is required.
4) We agree to coordination of asset registration.
5) We agree that a digital map of the energy system should be established and developed, as this will enable optimisation of investment and help the creation of new markets.

Q41 – Optimising data properly provides the material to make informed decisions. Therefore organisations and businesses all have a key role in making informed decisions reducing waste energy, reducing their carbon footprint and in tackling climate change. We line in the ‘big data’ world where information is key and access to this data is critical for all businesses especially to lead energy companies and government.
Provision of open access to the data enables all and will empower all to change.

c. Carbon Capture and Storage

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

Q42 – Large scale CCS should not be pursued as a solution. We would recommend that funding be put into research, to further investigate a local/On-site carbon capture solution. An example would be by capturing the CO2 produced from an AD or Bio Gas plant (Bio Gas is 60% methane and 40% Co2). This CO2 can then be used as a product. One method of using the CO2 is the Methanation route - this blends CO2 with Hydrogen to produce Synthetic Methane. When used in a traditional Gas burner, the Bio Methane will act as a traditional gas but as the CO2 is now energy, it will not harm the environment

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?

Q43 – The economic opportunities underpinned by world class Research and Development can include the following:

i. Full development of the Renewable Zero Emission economy delivering opportunities in Transport, Heat and Electricity
ii. Development of Smart Grid Energy Network
iii. Establishment of the Hydrogen Transport Infrastructure production and fuelling network
iv. Off shore wind and solar, including the development of our fishing villages
v. Low emission Marine Ferries; opportunities for Bombardier and Harland & Wolf
vi. Gas grid injection Bio Gas and Hydrogen – using existing Gas network infrastructure
vii. Exploit opportunities for wave and tidal energy solutions
viii. Expansion of Anaerobic Digestion, ensuring all 'Brown Waste' is re-cycled and used to provide energy
ix. CO2 Capture – Developing Methanation that is the conversion of CO2 to synthetic methane (CH_4) through hydrogenation
x. Development of Renewable Ammonia
xi. Hydrogenation of Waste Plastics - which is converting the waste plastics into an advanced fuel, including Plastic mining at disused landfill sites
xii. We could be an importer of waste from UK and EU, and recycle and export products including waxes and bio aircraft fuel
xiii. Develop use of fuel cells in Aeroplanes
xiv. Automated transport
xv. Manufacturing of Fuel Cells and Electrolysers (

Q44 – Key is the planned development of skills at all levels, from Level 2 to 7, focusing on:

i. Upskilling of Technicians and traditional trades
ii. High level Industry-ready Engineering degree (Polytechnic type solution)
iii. Development of more Industry-led Masters & PHDs

Q45 – Once we achieve our Energy Efficiency targets, all energy needs to be measured and only used when necessary, with the progressive transition to fully renewable energy sources and taking control of our own energy supply.

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?

Q46 – The NI Executive has declared a Climate Emergency therefore OFMDFM must take the lead, and all departments must report on their targets, actions and progress on a regular basis.
The climate emergency is too critical to leave to one Minister/ Dept - every department has to deliver on the net zero target.

Q47 - Local Government can lead the way by developing strategies that meet the needs of their community. They must work closely and deliver on the needs of local businesses by delivery on local economic growth strategies, which are aligned to national policies and strategies. For example:
- Belfast City Council could facilitate the development of zero emission ferries
- Mid and East Antrim could facilitate development of Hydrogen Transport, by aiming to attract Fuel Cell and Hydrogen storage manufacturers to the area
- Councils on the NI coastline could assist the development of harbours, to facilitate the growth in Off Shore Renewables.
- Hydrogen conversion for Vans and Waste Collection Trucks

Q48 - More legislation is without doubt needed, so that companies and the public have obligations, and face consequences for not meeting their obligations.

Q49 - Leadership on meeting the net zero target has to come from the top i.e. OFMDFM, and resignations need to follow when departments do not perform. Ministers cannot be allowed to hide behind collective responsibility. The formation of an independent body equivalent to the ROI's SEAI (Sustainable Energy Authority of Ireland) could also be considered to support Government-led Action Plans.

10. Additional information

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

Q50 – Energy carriers have now been identified as the key enabling solution that allow renewable sources to supply different forms of energy demand across demand sectors and thus strengthen their technical and economic viability. Today in the EU, about 98% of EU lorries/buses rely on diesel, virtually no large zero emission lorries and few zero emission buses drive on roads or in cities in Europe.

Using Green Hydrogen (GH2) meets the requirements of the European alternative fuels strategy and will improve the status of competencies of the transport sector delivering a low carbon transport solution in NWE. It has also been established that high penetration of RE in the NWE electricity sector is both technically feasible and affordable but development is limited by grid saturation. Wind power and solar are the fastest growing sources of RE in NWE. However the grid connectivity, the level of renewables saturation, and the general robustness of the grid in locations with high levels of renewable energy production capability currently prevent maximising the potential of RE production. For NWE to meet energy demand from RE, a technology that negates the need for an expensive expansion of the grid network or expensive storage solutions and that couples additional energy sector demands such as the transport sector is required.

In the long term the cost of renewable electricity will decrease and this will increase it's use as the source of energy for other sectors.H2 produced from renewable sources can become the energy vector to LINK the RE and transport sectors as it is highly flexible in terms of vehicle applications, enhancing grid reliability and energy storage. Trans European territorial collaboration will deliver the full breadth of regulation, policies and data required to fully energise decision making and ensure comprehensive EU use. I have established close working contacts & collaboration have been established with many other H2 projects (GenComm, H2SHARE. Big HIT, TSO2020, SEAFUEL) to demonstrate how a synergistic approach cam and will deliver benefit to NI.