SONI Draft Transmission Development Plan Northern Ireland 2021-2030 – Mutual Energy response

Mutual Energy welcome the opportunity to respond to SONI's Draft Transmission Development Plan Northern Ireland 2021-2030 (the "**draft TDPNI**").

No part of this submission is confidential, and it may be published in full.

Due to the timing of its publication, the draft TDPNI is likely to have been substantially developed in the absence of the NI Energy Strategy and therefore may require revision to take account of recent energy policy decisions e.g. commitments on offshore wind from 2030, development of the hydrogen economy, etc. The draft TDPNI is also based on projects considered critical for delivery of a 70% electricity consumption from renewable sources ("**RES-E**") by 2030 target in Northern Ireland. While consistent with the NI Energy Strategy, the recent Climate Change (No. 2) Bill[1] approved by the NI Assembly (after the publication of the draft TDPNI) has increased this target to at least 80% by 2030. As a general comment, Mutual Energy therefore believe it is necessary to review the draft TDPNI in light of these and other relevant changes in energy policy.

The remainder of Mutual Energy's comments are divided into two main themes: (i) comments on process/scope, and (ii) discussion on specific projects.

Process / Scope

The draft TDPNI is the first version of the document to take into account the assessed system needs arising from SONI's 'Tomorrow's Energy Scenarios Northern Ireland' ("**TESNI**"), which was published for the first time in 2020.[2] TESNI 2020 confirms that, in development of its scenarios, SONI coordinated closely with Northern Ireland Electricity Networks ("**NIE**"). Based on our interpretation of NIE's 'Networks for Net Zero' report' (as set out at Appendix 1),[3] the scenarios used by SONI in the TESNI 2020 all assumed a high degree of demand electrification across various sectors (including heat and transport, etc.) and that the "*gas grid would effectively be decommissioned by 2050*".[3] This approach however is not consistent with the NI Energy Strategy, which signals the intention to utilise NI's modern gas infrastructure, recognising the potential to generate and import zero carbon gases and commits to continued engagement with the gas sector to understand viable pathways to gas network decarbonisation.

SONI and NIE Networks have a legal obligation to develop an economic, efficient and coordinated transmission system.[4] Given the ongoing uncertainty regarding the potential and optimal pathway to net zero energy, evidenced by the NI Energy Strategy, and considering this legal obligation, it would seem prudent for SONI in future to appraise a more diverse range of possible demand scenarios. Such an approach would be consistent with National Grid ESO, who, through their Future Energy Scenarios report,[5] assess a broad range of possible energy pathways in GB.

TESNI is due to be reviewed every two years and we recommend that future reviews include more extensive collaboration with the gas industry (and others, as may be appropriate) to jointly develop

[1] http://www.niassembly.gov.uk/assembly-business/legislation/2017-2022-mandate/primary-legislation---bills-2017---2022-mandate/climate-change-bill/

[2] https://www.soni.ltd.uk/media/documents/TESNI-2020.pdf

[3] https://www.nienetworks.co.uk/documents/future-networks/networks-for-zero-net.aspx (see Tables 2 & 4 within)

[4] The Electricity (Northern Ireland) Order 1992, Article 12]

[5] https://www.nationalgrideso.com/future-energy/future-energy-scenarios/fes-2021

scenarios which appraise a range of potential options in meeting final energy demand – e.g. gas, power and other potential solutions. We observe that this approach of joint, common scenario development and appraisal is employed by European gas and electricity ENTSOs for their Ten-Year Network Development Plans ("**TYNDP**"), to capture the dynamics between the gas and electricity systems and assess the infrastructure requirements of an integrated energy system.[6]

Failure to adequately consider possible counterfactual net zero energy system scenarios may result in sub-optimal assessment of the transmission network 'reinforcement drivers and needs'. For example, increases in demand for hydrogen (including delivering system security, as well as meeting heating and other energy sector demands) is likely to influence the stated drivers of "*reinforcements to facilitate inter-regional power flows*" and/or "*reinforcements required to support changes in, or connection of new demand"*, subject to the siting of electrolysers. Given this will impact both the electricity and gas networks, we suggest there is a need for closer coordination across network operators to consider potential options regarding the scaling-up of electrolytic capacity on the system and its strategic siting, noting the findings of Gavin & Doherty Geosolutions Ltd.'s Wind Energy Ireland-commissioned 'Hydrogen and Wind Energy – The role of green hydrogen in Ireland's energy transition' report[7], which suggested, inter alia, that pipeline injection is the leading option to rapidly stimulate a domestic hydrogen market.

The reliance of the current power system on gas fired generation to maintain security of supply in the short to medium term should also not be overlooked, or the need to find an alternative net zero compliant fuel source over the mid to long term. Intra-day storage technologies are not a viable solution to prolonged periods of low renewable output, while interconnection needs reliable access to excess generation from its adjacent network to support security of supply – recent events have shown that this support may not always be available. Hydrogen currently seems the only feasible option available to the power system – consistent with the findings of Baringa's RenewableNI-commissioned 'Achieving Zero' report[8] – and its role in delivering future security of energy supply more generally needs factored into the draft TDPNI.

We would suggest the needs of the power transmission system to support the future role of hydrogen throughout the energy transition needs to be adequately assessed in the TDPNI and is required to allow SONI to deliver upon its obligation to "*plan the development of a safe, secure, reliable, economical, efficient, and coordinated transmission network that is able to meet all reasonable demands for electricity*", taking a long-term view.

Specific Projects

Moyle Interconnector Ltd. (a Mutual Energy subsidiary) previously submitted comments on the draft 2019-2028 Transmission Development Plan, welcoming inclusion of a project in the plan – 'Moyle 275 kV Reinforcement' in section 7.4.6 – which would permit full use of Moyle's technical 500 MW export capacity. We are pleased to see that the estimated completion of this project remains 2024.

We agree that this project would benefit market integration, security of supply and RES-E integration. Interconnection has an important role to play in decarbonisation, facilitating higher penetration of renewables and (notwithstanding Brexit) maximising interconnection remains a

[6] https://2022.entsos-tyndp-scenarios.eu/

[7] https://windenergyireland.com/images/files/final-hydrogen-and-wind-energy-report.pdf

[8] https://renewableni.com/wp-content/uploads/2021/09/Baringa_RenewableNI_Achieving_Zero_Final_Report_v2_0.pdf

priority across Europe, with regulatory policy requiring long-term solutions to constrained interconnector capacity.

Moyle's export capacity has historically been restricted by limitations on the GB system but these restrictions are due to be lifted from April 2022 so the NI system will be the limiting factor on Moyle exports from that point (notwithstanding outages commencing in April 2022 to facilitate installation of a new Moyle control system). Our understanding is that this project addresses a risk that is of low probability. We suggest a cost-benefit analysis ("**CBA**") is completed at the earliest opportunity. A CBA based on probabilistic assessment may conclude that Moyle's full 500MW export capacity can be utilised earlier than the 2024 'Moyle 275kV Reinforcement' completion date, resulting in a reduction in renewable curtailment in NI.

Noting that the SONI team has previously engaged with Moyle on the scope and options for reconfiguration of the network near Moyle and Ballylumford, we are happy to assist with any associated cost-benefit analysis.

Appendix 1 –

Mutual Energy's understanding of SONI TESNI and NIE Networks for Net Zero scenario alignment

Element Energy "World" as used in NIE Networks for Net Zero report		SONI TES Scenarios
World A This is the least ambitious scenario with a rate of change insufficient to meet Net Zero carbon emission in 2050 with a 60% Renewable Energy Source (RES) target by 2030.	• 60% RES-E at 2030 • Heat: Med • EV: Med • Solar: Low	**Modest Progress**
World B This scenario achieves significant decarbonisation, consistent with the UK reaching a Net Zero carbon emission energy system by 2050 with a target of 70% RES by 2030, through a high degree of electrification of both heat and transport demands.	• 70% RES-E at 2030 • Heat: High E • EV: High • Solar: Med • Gas Grid: Decommissioned by 2050	**Addressing Climate Change**
World C This scenario achieves significant decarbonisation, consistent with the UK reaching a Net Zero carbon emission energy system by 2050 with a target of 70% RES by 2030, through deep electrification of transport and decarbonisation of the gas grid.	• 70% RES-E at 2030 • Heat: Low E & H2 • EV: High • Solar: Med • Gas Grid: Post 2040, Hydrogen and other Low Carbon Gases, available to 550k customers	
World D This scenario achieves significant decarbonisation, consistent with the UK reaching a Net Zero carbon emission energy system by 2050 but is extremely ambitious with a 2030 target of 80% RES. It is similar to scenario world B in which there is deep electrification of demand; but in this scenario there is even more rapid electrification of passenger vehicles.	• 80% RES-E at 2030 • Heat: High E • EV: Very High • Solar: High • Gas Grid: Decommissioned by 2050	**Accelerated Ambition**
World E This scenario is very ambitious and compatible with Net Zero emissions by 2050. The only difference between Scenario worlds E and D is the way in which heat demand is met, with the focus on a repurposed natural gas grid to distribute hydrogen (as with Scenario World C) rather than high levels of electrification.	• 80% RES-E at 2030 • Heat: Low E & H2 • EV: Very High • Solar: High • Gas Grid: Post 2040, Hydrogen and other Low Carbon Gases, available to 550k customers	