

Energy Strategy
Department for the Economy
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RE: Energy Strategy for Northern Ireland – Consultation on Policy Options

Energy Storage Ireland (ESI) is an industry representative association comprised of members who are active in the development of energy storage in Ireland and Northern Ireland. Our aims are to promote the benefits of energy storage in meeting our future decarbonisation goals and to work with policy makers in facilitating the development of energy storage on the island of Ireland. We have over 30 members representing many areas of the energy storage supply chain.

We would like to thank the Department for the Economy (DfE) for the opportunity to provide feedback on the Energy Strategy for Northern Ireland – Consultation on Policy Options. We would like to make the following comments in relation to the consultation.

Increased Ambition

ESI fully endorse RenewableNI's submission to the Energy Strategy consultation relating to Baringa's 'Pathway to a zero-carbon power system in Ireland' study which is submitted as an accompanying appendix to their response.

The analysis shows that the emissions footprint of the all-island electricity sector can be reduced substantially beyond the 4 - 5 Mt of CO₂ objective of the ROI Climate Action Plan 2019 by 2030.

It concludes that:

1. Government should introduce capacity targets of 2,542MW of onshore wind, 500MW of offshore wind and 1,169 of solar PV in NI.
2. The Energy Strategy should set a 2030 power sector emissions target of less than 2 million tonnes of CO₂ which:

- Is very achievable by 2030;
- Does not require a significant change in the approach than that proposed to achieve 70% renewable electricity;
- Can be met by implementing more of existing technologies that are proven today; and
- Can be achieved at a lower cost to the end consumer.

3. A stretch target of a zero-carbon power system by 2030 is possible though:

- It requires incremental investments in a suite of new technologies; and
- It requires the introduction of a carbon price floor in I-SEM.

The results show that achieving less than 2 million tonnes of CO₂ in the electricity sector will not require a significant change in the approach currently proposed for 70by30. It is primarily “more of the same”. Industry is developing a sufficient pipeline, the interconnection required is in development and the DS3+ programme is already planned (although the objectives of the DS3 programme needs to be updated to include the complete removal of system operational constraints i.e., SONI’s 95% SNSP target needs to increase to 100% SNSP and the system should be capable of operating with no minimum conventional generation requirements). The most significant change is that SONI will need to accommodate more grid development than the relatively low project limit suggested in the Shaping our Electricity Future consultation.

We strongly endorse these positions and recommend that DfE considers implementing these positions in the final Energy Strategy.

Need for an Energy Storage Strategy

Energy storage technologies are a key enabler to a decarbonised electricity system, and their deployment supports climate action and energy security goals by providing a multitude of valuable services. Storage systems can act in the energy, capacity and system services markets to deliver a wide range of benefits such as wholesale energy price reductions, reduced CO₂ emissions and flexible system support services to help manage the grid with higher levels of renewables.

To support the growth of energy storage as a key part of the energy transition in achieving these goals we have published two reports and we would like to engage further with DfE on implementing the policy recommendations arising from them:

- [*Our Energy Storage Future*](#) is our all-island storage roadmap. This sets out a number of key policy recommendations necessary to facilitate the development of energy storage in Ireland and Northern Ireland in the short, medium and long-term.

- [*Store, Respond and Save*](#) is a report by energy consultants Baringa, commissioned on behalf of ESI, which shows how new zero-carbon technologies such as battery storage can ensure the all-island power grid remains strong and secure while delivering significant CO₂ emissions reductions, driving down system costs and reducing renewable curtailment. Sourcing all system services from these zero-carbon technologies, instead of their traditional provision from fossil fuel generators, can avoid up to 2 million tonnes of power sector CO₂ emissions, reduce system costs by €117 million and reduce renewable curtailment from 8% to 4% **per annum** by 2030.

A robust policy, regulatory and commercial framework is needed to allow for the deployment of energy storage on a large-scale. Baringa's 70by30 report¹ projects at least 1700 MW of energy storage will be needed by 2030 and that these projects will be active across a number of markets such as system services, capacity and energy trading. Over the longer-term, long duration multi-hour and even multi-day storage providers will be needed to ensure system adequacy with higher levels of renewables.

Currently the majority of battery storage projects are developing under the DS3 system services arrangements to provide fast frequency response and operating reserve services that are important to help manage an electricity system with high penetration of renewables.

However, there are still many barriers that are blocking the full integration of energy storage and preventing projects from stacking revenues across the wider storage use cases. There is a disjointed approach to many energy storage policy issues among the various policy makers which risks policy misalignment and the creation of further issues down the line.

A coordinated strategy for energy storage is needed as part of the Energy Strategy to ensure investment is supported through the various pillars of the market and that new energy storage technologies are fully integrated into the electricity system and market to unlock their full potential. This should bring together the relevant stakeholders such as DfE, the Utility Regulator, System Operators and industry to ensure a coordinated approach to energy storage going forward.

DS3 System Services

EirGrid and SONI held a DS3 Volume Capped auction in 2019 which procured 110 MW of new build battery storage projects, that are expected to come online in 2021. However, there is no certainty on further potential auctions and the other development route for storage and new flexible technologies, the DS3 Volume Uncapped tariff arrangements framework, is due to expire in 2024. A joint CRU and NIAUR regulatory decision is needed to put in place a new long-term enduring procurement framework and, while work on this framework has begun, it is likely to take a number of years for final decision and implementation

¹ https://windenergyireland.com/images/Article_files/Final_Baringa_70by30_Report_web.pdf

The objective of the future System Services project needs to include national decarbonisation and renewable energy policy aims as a central goal, rather than solely focusing on delivering a competitive framework.

We believe that a key metric of success for the enduring framework should be that the system can run on up to 100% renewables with all System Services coming from zero-carbon sources at any one time. We believe this is a necessary step in order for the system to deliver 70% RES-E by 2030 in the most efficient manner.

Adequate investment signals are also needed for new build providers of zero-carbon system services that will be required to support a system with 100% SNSP. To maintain investor confidence appropriate time must be allocated to the development, design, delivery and transition to an enduring set of system services market arrangements, while clearly defined transitional arrangements must be provided to maintain clear investment signals for services and technologies necessary to deliver renewable targets over the next 10 years and beyond.

The current DS3 system services cap of €235m per annum was put in place to reach 2020 targets and a 75% SNSP limit. We have already reached or exceeded these targets so it logically follows that the expenditure must now be reviewed and revised upwards to ensure the 2030 targets are met. This ambition must be supported by adequate resources and funding to deliver the technologies and services required. The DS3 tariff arrangements have been extended until 2024 but this must be considered in the context of the additional budget requirements needed to maintain a clear and strong investment signal. Without this there is a risk of stalling investment in new system service technologies and limiting our ability to increase SNSP levels.

New DS3 products will also be important and energy storage with grid forming inverters are likely to have an important role in stabilising a future system with few or no synchronous generators (thus reducing current operational constraints such as the minimum no. of synchronous generators and the associated curtailment of renewable generators). This is just one of many services that storage can provide thus allowing revenue stacking capability and the lowest cost assets.

Capacity Market

The capacity market must also support new investment in low carbon technologies and avoid locking in inflexible generation for years to come. To date the capacity market has been geared towards conventional thermal plant but this focus needs to shift and a review of the market carried out to ensure investment is delivered in the technologies that can support renewables and our capacity needs over the longer-term. Strict emissions limits could be considered here for new build contracts in future capacity auctions to support new zero carbon technologies. For instance, in Spain the Government are proposing that long-term capacity contracts will only be provided to zero emissions technologies.

Electricity Market

Energy storage will also play an important role in energy trading thus helping to reduce system costs and carbon emissions. However, the full integration of energy storage in the market is not possible at the moment as the TSOs' market IT interfaces are not set up to adequately accommodate storage providers. This impacts the ability of storage projects to charge and discharge efficiently and gain access to different revenue streams that would unlock more consumer benefits. This issue must be addressed as soon as possible and we would welcome focus on these solutions as part of the Energy Strategy.

Planning Policy

Our members have raised significant concerns regarding the impact of the Chief Planner's Update 7 of 16 December 2020 (the Update), and previous DfI correspondence in relation to BESS applications, which have caused substantial disruption for the battery storage industry in Northern Ireland. Already several planning applications have been declared invalid and others are not progressing as the Update adds a large degree of uncertainty to BESS planning applications, both retrospectively and going forward, which are needed to help support our electricity system with growing levels of renewable generation. It is particularly concerning that this step has been taken without appropriate consultation or discussion with industry. This is an extremely important matter for the industry with hundreds of MW of battery storage projects in active development in Northern Ireland that have been impacted by this issue.

We believe planning policy needs to be reviewed to include appropriate categorisation of energy storage, including battery storage, and that any proposed changes in this regard, including thresholds, should be consulted on prior to any legislative or policy changes. We disagree completely with the categorisation of battery storage as electricity generation as it cannot be said to be generating electricity, its purpose is to store energy that has been generated elsewhere at a point in time and to resupply that energy to the electricity grid at another point in time.

Long-Duration Storage

In the longer-term, getting to net zero will require shifting energy demand from other sectors such as heat and transport into electricity and long-duration energy storage. In our all-island roadmap paper, we have highlighted the potential role of technologies such as hydrogen electrolysis in the energy transformation. The development of an all-island body to oversee and incentivise developments in this area would be a welcome step and something we would like to see included in the final Energy Strategy.

Market system improvements are also required to facilitate longer duration storage. Analysis by Baringa shows the benefits of long-duration storage assets such as pumped storage,

compressed air storage, or long-duration batteries which add flexibility to the I-SEM system and act to reduce curtailment of renewables.

Once the all-island power sector reaches a point of having less than 2 Mt of CO₂, Baringa Partners considered the impact of 800 MW of 100-hour duration storage capacity being deployed throughout ROI and NI, with an average round-trip efficiency of 60%, and the impact which this would have on further reducing CO₂ emissions in the power sector.

This capacity is representative of several emerging technologies including:

- Long-duration pumped hydro energy storage;
- Compressed air energy storage;
- Thermal energy storage (e.g. liquid salt, 'hot rocks'²);
- Liquid air energy storage³;
- and novel battery compositions, e.g. vanadium redox flow, NaS and NaNiCl₂ batteries.

The long duration of the storage assets allows them the flexibility to take in excess renewable generation during low demand hours, and export that energy when it is most needed during hours of low renewable output. Correspondingly the volume of RES curtailment in I-SEM is reduced to around 1.8 TWh compared to previous scenarios where long-duration storage was not examined.

Generation of the storage assets displaces domestic fossil fuel-fired plant, reducing fossil gas generation to 1.8 TWh, down from 2.6 TWh in the previous scenario.

Power sector emissions are reduced in proportion, down to 0.68Mt of CO₂, a drop of 0.28 Mt of CO₂.

This demonstrates the potential benefits of long-duration storage for Northern Ireland, and incentives for the rollout of these technologies should be put in place to encourage their usage in helping us get to a zero-carbon power system as soon as possible.

Conclusion

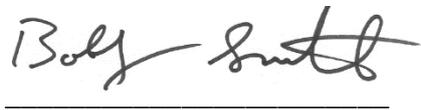
In conclusion, we would like to thank DfE for the opportunity to provide feedback on the Energy Strategy for Northern Ireland – Consultation on Policy Options. We are available to discuss any

² https://www.rechargenews.com/energy-transition/stiesdal-hot-rocks-energy-storage-technology-stoked-by-andel-funding-boost/2-1-998021?utm_content=buffer82f9d

³ <https://www.environmentalleader.com/2021/04/construction-to-begin-on-worlds-largest-liquid-air-energy-storage-project/>

of the points made above in more detail should you require, and we look forward to working with you in future.

Yours sincerely,

A handwritten signature in black ink that reads "Bobby Smith". The signature is written in a cursive style with a horizontal line underneath it.

Bobby Smith
Energy Storage Ireland