FlexTech Consultation 2019

A Flexible Technology Integration Initiative

30th September 2019

EIRGRID SONI

Supported by

ESB NETWORKS Northern Ireland Electricity Networks

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 773505.

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1. Overview

1.1. Introduction

The FlexTech Initiative is a platform of engagement for the Transmission System Operators, Distribution System Operators, industry, regulators and other stakeholders to maximise opportunities for effective use of new and existing technologies and to identify and break down key barriers to integrating renewables.

The recently published Government of Ireland "Action Plan 2019 to Tackle Climate Breakdown[1]" requires that by 2030, 70% of Ireland's electricity needs shall be met by renewables. While a similar target has yet to be considered in Northern Ireland, a reasonable assumption can be made that Northern Ireland's ambition will continue to be aligned with that of the UK. The recent commitment by the UK to net zero greenhouse gas emissions by 2050 would indicate that Northern Ireland will increase its renewable production to at least 50%[2] by 2030. Given this ambition, it is recognised that transformative change is required across the electricity sector. From a system operation perspective, achieving 70% renewables will necessitate operating the all-island power system at unprecedented levels of System Non-Synchronous Penetration (SNSP). At present we can operate the system at 65% renewables at any given time; However, by 2030, we will need to operate the system at SNSP levels > 90%.

The electricity industry is evolving at an ever increasing pace. In order to meet the challenges associated with decarbonisation and to ensure the best use of new and existing technologies. EirGrid and SONI recognise the need for positive and proactive engagement with all stakeholders. To react to the pace of change, the transmission and distribution system operators need to work together in an agile and efficient way to embrace opportunities and resolve issues as they arise.

In June, EirGrid and SONI, supported by ESB Networks and NIE Networks, held the first FlexTech Integration Initiative industry forum. At this forum, we outlined our perspectives on the key challenges and barriers to renewable integration. It was a great opportunity to engage with industry and gain cross-sectoral insight. Following on from the forum, we committed to setting out our first consultation paper. The objective of this consultation paper is to gain stakeholders' perspectives on the key challenges industry faces and what they believe are the priorities for the future. From this, EirGrid and SONI together with the System Operator Task Force (TSOs/DSOs) will assess feedback and identify actions to prioritise.

[1] https://www.dccae.gov.ie/documents/Climate%20Action%20Plan%202019.pdf
[2] http://www.soni.ltd.uk/media/documents/TES-NI-2019-Consultation.pdf

These opportunities and challenges will have to be prioritised to provide what the TSO's and DSO's consider will be the best outcomes to meet our consumers' needs and operation of the future power system. Through collaboration we can better understand the key challenges of participants in the electricity sector that, if resolved, will bring considerable benefits in the further integration of renewables to meet Ireland and Northern Ireland's needs.

The FlexTech Initiative is a platform of engagement for the Transmission System Operators, Distribution System Operators, industry and regulators with the objective of identifying opportunities and removing barriers to renewable integration.

1.2. The Challenge

A further increase in renewable penetration will result in a power system heavily reliant on variable non-synchronous sources of energy, a reduction in system inertia and increased system congestion. A more distributed and decentralised environment with the increase in the number of "smart" devices leading to changes in consumer behaviour and the overall demand profile for electricity. To help address these changes and ensure a safe, secure and reliant power system, there will be a need for large-scale deployment of storage, increased interconnection, increased demand side participation, enhanced system services market and products as well and changes to system operation policies, tools and procedures.

The DS3 Programme was designed to ensure secure operation of the power system with increasing amounts of variable non-synchronous renewables up to 2020. The target for renewables for 2020 is 40%, which can be achieved with a limit of 75% of energy coming from non-synchronous, renewable sources at any point in time. We are on track to meet this target and the DS3 programme has been pivotal in achieving the current level of renewable penetration. The challenge for the future system operation is to push the levels of renewable integration further while facilitating our targets and delivering a low carbon power system.

In a world of 70% renewables in Ireland and potentially over 50% in Northern Ireland there will inevitably be many times during which the percentage of instantaneous power provided by non-synchronous, renewable sources will exceed 90%. This means we cannot rely on conventional generation and its inherent stabilising capabilities. There are also several key factors that will impact our ability to meet our collective ambition and address associated renewable integration requirements:

- The scale of RES-E must increase dramatically,
- The nature of RES-E technology will diversify on an all island basis, for example solar technology, offshore and small scale generation are likely to become far more prevalent,
- Increased consumer participation along with the adaptation of smart devices, will lead to further changes in consumer behaviour,
- RES-E generation is likely to become even more decentralised and distributed on an all island basis which will require greater interaction and co-operation of system operators,
- Disruptive technologies (such as in-home controllers, EVs) and participants (such as large energy users and micro generation) will present both opportunities and challenges to system flexibility and system management,
- System demand will increase dramatically given the increase in penetration of large energy users and the electrification of heat/ cooling and transport,
- System wide flexibility will become more important than ever. Delivering a low carbon future power system will require a power system that is capable of operating above 90% SNSP. This will necessitate a significantly enhanced system services market requiring a broader portfolio of services as well as provision of services from providers across the spectrum of electricity actors. It will require significant enhancement of control centre tools, operational policy and procedures building upon EirGrid and SONI's DS3 programme, and
- Limited network capacity leading to congestion. This may require consideration of new infrastructure and congestion management solutions and tools relating to changing behaviour.

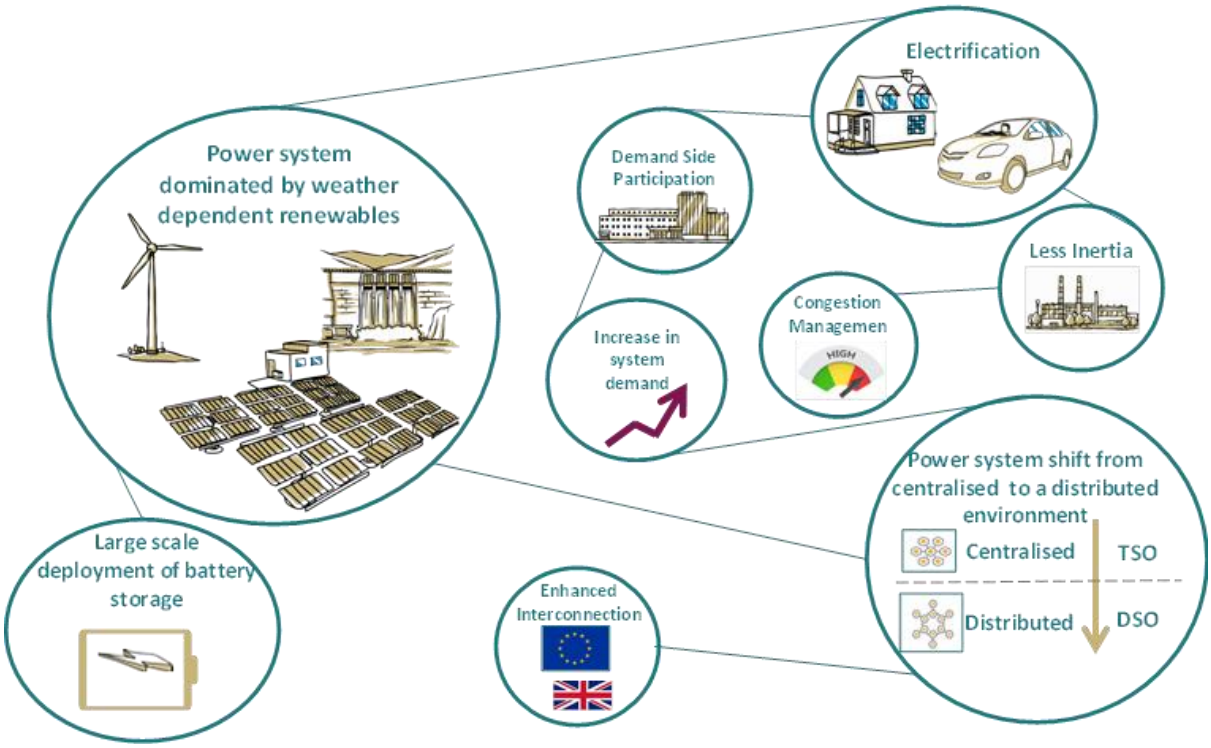

Figure 1 - The Vision

The purpose of this consultation paper is to seek industry feedback on the overall structure of the FlexTech initiative as well as the focus areas and priorities highlighted for progression in 2019/2020.
Please submit your responses to the questions outlined below by ***4th November 2019***

2. FlexTech Structure

2.1. The Structure

The FlexTech Integration Initiative will be an ongoing process consisting of three distinct functions:

- An Industry Forum;
- Internal EirGrid/SONI Working Groups;
- A System Operator Task Force (TSOs/ DSOs).

Figure 2 below illustrates the interaction between the distinct functions and the outputs of the process. The three functions will engage on an annual basis to identify and prioritise the key opportunities and issues affecting the integration of renewables and other supporting technologies. These will then form the basis of a consultation that will identify key tasks for the coming 12-month period.

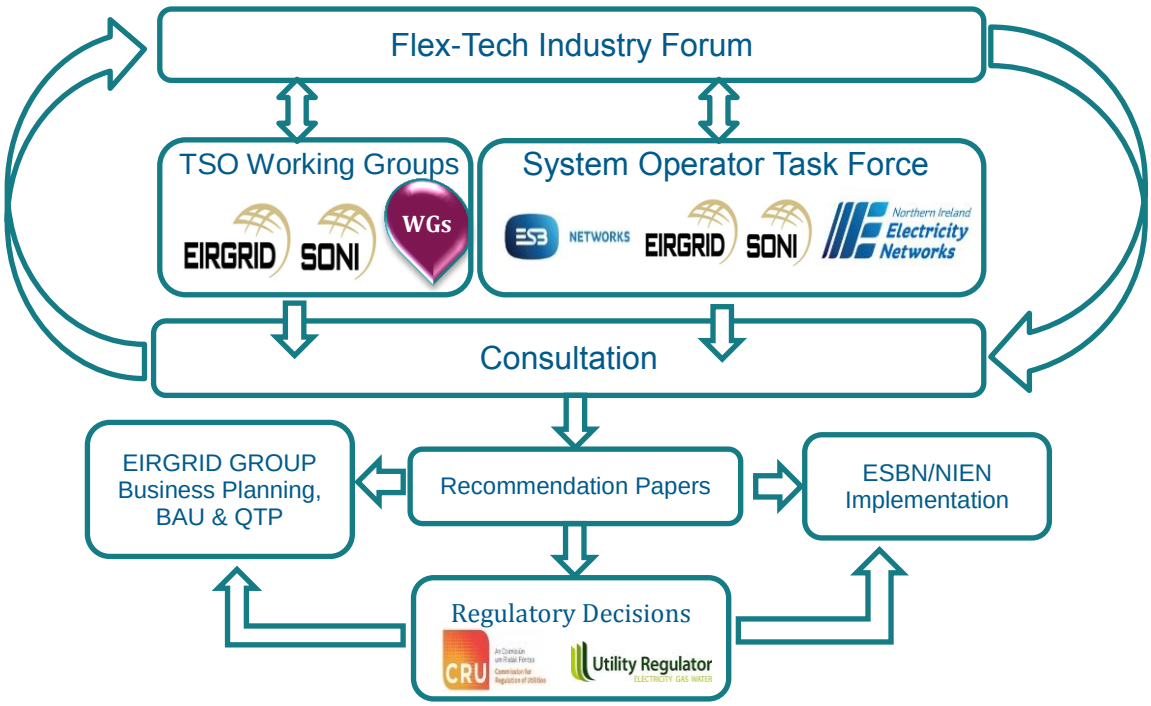

Figure 2 - Structure & interaction of distinct functions within Flex-Tech Initiative

Following receipt of consultation feedback, an assessment will be carried out followed by development of recommendation papers. Recommendations relating to TSO issues will inform future business planning, business as usual changes, new project development as well as inform the Qualification Trial Process. Separate recommendation papers will be developed where it is identified that regulatory decisions are required. It is envisaged that, if necessary, a separate recommendations paper will be developed by ESB Networks/NIE Networks relating to integrating FlexTech recommendations along with initiatives for managing greater flexibility and capacity on the distribution network. For transparency, recommendation and decision papers will be published and issued to industry participants. It is intended that an annual report will be published outlining progress and implementation.

2.2. Role of Industry Forum and Consultation Process

The Industry Forum shall act as a consultative body focused on identifying key opportunities and potential solutions across a broad range of challenges associated with renewable integration. The forum will not be a decision-making or policy formulation body but rather an open and transparent platform of engagement and consultation with industry on key topics. We envisage that the forum will take place bi-annually. Initially, there will be five key strands addressed, namely:

- Hybrid Technology;
- Renewables & Small Scale Generation;
- Storage Technology;
- Demand Side Management;
- Large Scale Energy Users.

It is intended to hold an open consultation annually to reassess the terms of reference for the initiative and to identify the key deliverables for the following year.
This will help inform the topics for further investigation and ensure the direction of the initiative remains relevant and effective.

To make substantial progress, it must be clearly understood from the outset that for TSO related matters, EirGrid and SONI shall be the decision makers regarding the final terms of reference and the topics for further investigation. In arriving at our decisions, EirGrid and SONI will endeavour to address key concerns of industry while not compromising on the overall system needs regardingrenewable integration for 2030. In tandem, we anticipate that the DSOs will work in parallel to address issues specifically related to their system and will also be the final decision makers on these issues. In relation to TSO-DSO related matters, the TSO & DSO in the relevant jurisdiction shall be the joint decision makers. Where issues impact across transmission and distribution networks, the System Operator Task Force shall seek to agree a way forward and progress solutions.

2.3. Role of System Operator Task Force

Many of the challenges we will face are related to changes that require a joined up approach between TSO and DSO. It is therefore essential that greater co-operation and collaboration be established. The System Operator Task Force will be made up of representatives from EirGrid, SONI, NIE Networks and ESB Networks. The industry forum and internal EirGrid/SONI working groups will inform the System Operator Task Force on relevant issues. The task force will be responsible for resolving matters, which are cross-sectoral in nature and seek common ground, which can be presented to industry and regulators.

2.4. FlexTech Programme

It is envisaged that FlexTech will be an ongoing initiative with the following programme each year;
Q2 – Industry Forum – Review of previous year, identification of priorities for coming year,
Q3 – Consultation Process –Terms of Reference, priorities for coming year,
Q4 – Industry Forum – Progress update, opportunity for industry feedback, and
Q1 – Qualification Trial Process (QTP) – FlexTech will help inform the scope of future QTP processes.

2.5. Consultation Question

Question 1: Do you have any comments on the FlexTech structure or how it will operate?

3. Hybrid Technology

3.1. Introduction

Hybrid sites and hybrid units present an opportunity to provide more flexible plant with improved capacity factors with potential for optimising use of existing infrastructure.

Industry has expressed an interest in developing hybrid sites or hybrid units at both new and existing connections. Hybrids present opportunities for both system operators and developers with increased diversity factors improving security of supply. While it is possible to seek and obtain a connection for a hybrid site or unit and connect to the system, there are certain issues that, if addressed, could unlock further potential for these developments and make hybrids more appealing. EirGrid and SONI are also committed to maximising the use of transmission infrastructure.

EirGrid and SONI are working with industry to consider the mechanisms that would enable an increase in the capacity factor of given connections through the installation of hybrid sites or hybrid units. One possibility is to allow an increase in the installed capacity of existing connections without increasing the Maximum Export Capacity (MEC).

This would allow customers to increase the capacity factor of a connection. However, the grid has not been designed to enable all connections to utilise their maximum MEC or Maximum Import Capacity MIC at all times and therefore an increased capacity factor for numerous connections using the same fuel source may lead to congestion issues. It requires a prudent approach, there may be particular technology mixes which suit this arrangement over others, for example, a wind/solar mix. The addition of storage capacity to a generator with an intermittent fuel source could mitigate congestion issues provided the storage capacity is capable of discharging over an adequate duration. Consideration should be given to mitigate against the risk of increased constraints costs.

Another proposal under consideration is the provision for 0 MW MEC units with an allowance to trade MEC between units behind the same connection point where there are no congestion issues in the vicinity. Industry has also expressed an interest in two separate legal entities being permitted to share a connection point. This issue was previously examined and a number of legal and contractual issues were identified in particular regarding the sharing of liability. This whole area is being re-examined in the context of the Climate Action Plan and the Clean Energy Package.

3.2. Proposed priority areas

- Investigate possibility of increasing installed capacity limit beyond 120% of MEC,
- Investigate viability of 0 MW MEC units with an allowance to trade MEC between units behind the same connection point,
- Explore the technical and communication challenges of prioritising, dispatching and scheduling hybrid plant for System Services, and
- Investigate mechanism to allow multiple separate legal entities to share a single connection point.

3.3. Consultation Question

Question 2: Do you have any comments on the Hybrids work stream, the proposed priority areas and the order of those priorities?

4. Renewables & Small Scale Generation

4.1. Introduction

Maximising the provision of System Services from new and existing renewables is a major priority for 2030. Increased levels of small scale and micro generation are presenting new challenges in terms of visibility and controllability.

SONI is facing a major challenge in terms of managing the impact of embedded uncontrollable small scale (<5MW) and micro generation (<11kW). This generation is mostly made up of wind and solar technology. As this generation is uncontrollable, it cannot be curtailed, which results in a changing system demand profile and adds a complexity to demand forecasting.

Ireland has very little of this type of generation at present but the 2019 Climate Action Plan states “The Government strongly supports enabling people to sell excess electricity they have produced back to the grid”. At present, we do not forecast solar energy or the impact of micro generation effectively but we are working to address this issue in Northern Ireland and to proactively seek a solution for Ireland before the challenge presenting itself. Further consideration needs to be given to the risks and opportunities associated with micro generation. Through our experience to date, we have identified the following issues for Renewables and Small Scale Generation:

- Visibility and controllability of small-scale generation: Consideration needs to be given to the expected performance, controllability and visibility of small-scale generation (< 5 MW). NIE Networks have developed provisions for these units, which are in the process of being entered into the Northern Ireland Distribution Code. EirGrid and SONI shall consider a potential review of the Grid Codes as they relate to distributed, connected generation and ensure it is appropriate,
- Repowering is likely to soon become a significant factor in the wind industry. The DSO has already received some applications for repowering of older wind farm site. With the high level of new renewables required to deliver a low carbon energy system, engagement across industry, system operators and regulators will be needed to ensure repowering can be effectively facilitated to the maximum its potential and
- Maximising System Services from renewables: Provision of system services from renewable generation is key to meeting our 2030 targets. The provision of Steady State Reactive Power from windfarms during low/no wind scenarios have been identified as a possible solution to help meet system needs in some locations. It requires some investigation to determine how this resource can be incentivised and maximised for both wind and solar generation.

Large-scale deployment of offshore wind is expected to occur within the next 10 years. There are major regulatory decisions which are currently under consideration regarding the mechanisms for connection of offshore wind. For this reason, it has been decided that offshore will not fall within the remit of the FlexTech initiative in 2019/2020 however it is envisaged that this may change for 2020/2021.

4.2. Proposed priority areas

- Investigate mechanisms for improved forecasting of demand with high levels of micro generation,
- Investigate mechanisms for improved visibility and controllability of distributed energy resources,
- Review testing procedures and signal lists for Small Scale Generation (1-5MW), and
- Engage with industry to understand opportunities associated with repowering.

4.3. Consultation Question

Question 3: Do you have any comments on the Renewable & SSG work stream, the proposed priority areas and the order of those priorities?

5. Storage Technology

Storage Technology, given its ability to reduce RES curtailment and provide service availability without generating, has the potential to play a major role in both the energy and system services market over the next 10 years and beyond.

5.1. Introduction

EirGrid and SONI and the DSOs are processing a number of battery storage connection applications both in Ireland & Northern Ireland. For example, ECP-1 2018 batch that is the first stage of the CRU's development of enduring connection policy in Ireland contains several battery projects. Also, several batteries were successful in the latest T-4 Capacity Market auction, and EirGrid has been instructed by CRU to provide connection offers to those located in Dublin due to local security of supply issues.
The possibility of a contract under the DS3 Volume Capped arrangements provides a particular incentive for battery units. However, the volume of prospective connections is far more than can be contracted under Volume Capped, and there is uncertainty as to whether those unsuccessful in the procurement process will still seek to utilise their connection. This raises issues regarding assumptions around operation. In order to accurately model their impact on the grid, it is important to have a reasonable estimate as to how we would expect these units to be dispatched, and this may differ between units in and out of the Volume Capped arrangements.

For the Volume Capped arrangements, industry raised concerns that frequent cycling of the battery plant has a big impact on the expected lifetime of the battery and therefore the cost at which they could provide services. As such, for these arrangements we are limiting the number of dispatches to 10 per year outside of frequency events. However, implementing this in the Single Electricity Market (SEM) creates some challenges, as does potential interactions with a unit's Capacity Market obligations. There is interest in industry in creating a model where a battery unit provides services purely in frequency response mode and is non-controllable. It may be worth considering if this would be a viable option from a TSO perspective in terms of providing cost-effective services. Many issues would need to be teased out – charging mechanism, max unit size etc.

For recharging, the understanding is that all units above the SEM de minimis size (10MW) will recharge via a dispatch instruction. Consideration should be given to ensuring this is always the case. In addition, consideration should be given to controllability of charging units below de minimis.

Through our experience to date, we have identified the following issues for storage units:

- **Mode of Operation:** As mentioned above, it is important to have a reasonable estimate how storage units would be dispatched. If we assume more benign operation behaviour from a network perspective, how do we deal with the risk that they might operate differently? Conversely, if we assume over-utilisation we may prevent them from providing valuable services to the system and tie up grid capacity unnecessarily. The manner in which a unit recharges will be influenced by its mode of operation. This in turn will influence the MIC that the unit seeks in its application. When assessing how the battery will operate, we need to predict also how frequently we would expect recharging to occur.
- **Prioritisation of Grid Access:** How should we treat storage where it is competing with other strategically important generation (e.g. wind or solar) for grid access?
- **Grid capability for fast response:** The potential for single providers to inject sizeable volumes of power into the network at speeds faster than 300ms creates new challenges for the DSOs in particular. ESBN is reviewing how this should be considered in applications and has identified potential risks.
- **Grid Code/Distribution Code:** It may require modification in some circumstances, depending on the jurisdiction to ensure that storage meets the same requirements as non-storage Power Park Modules.

5.2. Proposed priority areas

- Investigate a mechanism for identification of, and appropriate treatment of, various modes of operation,
- Review of Grid Code/ Distribution Code for Storage,
- Strategic consideration to be given to the prioritisation of grid access, and
- System Operator Task force to assess impacts of fast response services on Distribution Systems.

5.3. Consultation Question

Question 4: Do you have any comments on the storage work stream, the proposed priority areas and the order of those priorities?

6. Demand Side Management

In a world of 70% renewables and SNSP above 90%, demand side participation is going to be of increasing importance. We must strive to maximise the capabilities of demand side service providers.

6.1. Introduction

Demand Side Management (DSM) is an inherently flexible resource that has a huge potential to provide flexibility to the power system. While DSM has been around in various forms for many decades, in terms of participation in energy and system services markets, it has not fully matured. Historically, in Ireland and Northern Ireland DSM has provided some flexibility to the power system through schemes such as the Short Term Active Response (STAR), which provided static low frequency response from Industrial demand customers. While domestically, economy 7 tariffs (Northern Ireland) and Night saver (Ireland) tariffs incentivised customers to use storage heating, charging overnight, thus creating overnight load while reducing evening peak load.

The energy, capacity and to a lesser extent DS3 System Service markets which have developed from demand side management have primarily been designed around the technical and commercial characteristics of conventional generation technologies and traditional energy supplier models. These markets have further developed in more recent years to facilitate the participation of variable renewable generators resulting in large-scale growth in these industries while simultaneously enabling these technologies to provide flexibility and services to the TSO.

From a market facilitation perspective, DSM is more complex to facilitate in markets than other technologies such as renewable generators. This is primarily because DSM is typically not a single generation asset and instead is compiled of an aggregation of distributed sites providing a net demand reduction on the system. Notwithstanding the additional metering complexities, other factors, which have delayed DSM from developing to its full potential to date, include the availability and cost of appropriate communications and metering solutions, suitable for smaller commercial and residential sites. Coupled with this, the historically small remuneration attributed to System Service provision as opposed to energy and capacity locked participation out to all but larger industrial sites.
Notwithstanding this, DSM has been facilitated and has grown substantially in the SEM in recent years through the use of both the DSU and Aggregated Generating Unit (AGU) market models. However, participants utilising both of these models have to date relied heavily upon remuneration through capacity revenue, and less so on active participation in the energy market and the provision of System Services.

There has been continued growth in recent years in terms of DSM participating in the System Services markets, primarily frequency response and ramping margin services. Coupled with this, DSM has continued to grow in terms of Capacity market participation performing well in all recent auctions.

However, the vast majority of this resource comprises of large industrial customers, some of whom provide a net demand reduction through displacing demand imports through the use of running non-renewable back-up generators. While there is a value to this form of DSM, the model now needs to evolve to facilitate smaller flexible sites, including residential customers who can provide greater levels of flexibility through inherent flexibility and/ or storage potential in the technologies, which they aggregate. Processes such as refrigeration, air conditioning and technologies such as heat pumps and Electric Vehicles offer huge potential in terms of demand side participation.

The DSM work stream will aim to address the current challenges faced by industry in the provision of flexibility in the shorter term, while addressing challenges of participation of residential level demand side in the medium term timeframe. Most demand side units are and will continue to be connected to the distribution network. Therefore, the utilisation of this resource must be mindful of the constraints of the distribution network and the DSOs statutory and licence obligations to maintain a secure and acceptable level of performance to all customers.

6.2. Proposed priority areas

Through our experience with DSM to date we have identified a number of areas which present barriers to either DSM providing flexibility to the TSOs, or act as barriers to the TSOs utilising the flexibility provided by DSM. While the TSOs acknowledge that the following list is not exhaustive, we believe that focusing upon these issues should be the priority of the FlexTech DSM work stream.

- Access the current registration arrangements for DSM participation in the energy, Capacity and System Service markets,
- Examine the current end to end Control Centre Integration of DSM, in terms of forecasting, scheduling and dispatch,
- Progress upon actions required in order for DSU to comply with the Capacity Remuneration Mechanism CRM state aid decision[3]
- Review of the current performance monitoring processes and develop improved processes as appropriate,
- Examine the appropriateness of current metering and data provision requirements of aggregators,
- Engage further with all stakeholders to better understand the impact of activation of System Services on the distribution system,
- Review the current processes around engagement, impact and utilisation of DSOs issued instruction sets,
- Engage with DSOs to progress upon increasing the granularity of instruction sets
- Review the current commissioning and testing arrangements of aggregators,
- Examine the current telecommunications requirements, and
- Review of the current Grid Code requirements.

[3] https://www.semcommittee.com/sites/semc/files/media-files/SEM-19-029%20-%20DSU%20State%20aid%20compliance%20-%20Decision%20paper_0.pdf

6.3. Consultation Question

Question 5: Do you have any comments on the demand side management work stream, the proposed priority areas and the order of those priorities?

7. Large Energy Users

Large energy users form an increasing portion of the system demand. These users may offer major potential in terms of demand side participation.

7.1. Introduction

The demand forecast in Ireland is heavily influenced by the expected growth of large energy users. This trend is not currently a feature in Northern Ireland but there have been some enquiries related to possible new large energy user. These sites can require the same amount of energy as a large town. The 2018 All Island Generation Capacity Statement shows that demand from large energy users could account for 31% of all demand by 2027 (in the median demand scenario). Many of these customers have on site back up generation, which they can switch to instantaneously during a system event. Issues may arise where large demand customers switch over to back up generation during a fault and do not return to their normal demand profile.

This could cause a power imbalance once the fault has been cleared. Consideration must be given to how such issues may be prevented. These sites also have major potential to act as fast acting reserve, providing system services. The system operators need to proactively engage these users to further attract them into the system services market and ensure the capabilities of the back-up generation are in line with system requirements from the design stage.

- The system services market is currently capped at €235m[4]. As the requirements for new and existing services increase, there may be the opportunity to procure these services through existing connections, providing benefit of the energy customer.

- Currently demand customers can only participate in the system services market through an aggregator. Consideration should be given to the scale of the large energy users and whether it may be more appropriate for them to participate directly in the system services market. Due to the scale of some of these sites, it may be beneficial for the TSOs to have direct interactions with these units.

- Consideration to be given to fault ride through requirements for large energy users

[4] Post 2020 any increase to the cap will be at the decision of the SEMC.

7.2. Proposed priority areas

- Proactively engage with large energy users to investigate appetite for participation in System Services market,
- Carry out analysis to assess suitability for large scale users to be controlled directly or through an aggregator, and
- Examine changes that may be required to Grid Codes, Distribution Codes and/or Network Codes.

7.3. Consultation Question

Question 6: Do you have any comments on the large scale energy users work stream, the proposed priority areas and the order of those priorities?

8. Qualification Trial Process

The Qualification Trial Process (QTP) is an existing process, which was developed under the DS3 programme. As part of FlexTech, we are expanding the scope of the QTP. We are seeking industries input to identify and inform key areas of focus for upcoming trials. The QTP will provide the technical platform to trial resilience services from new technology and develop solutions to operational complexities.

8.1. Introduction

The Qualification Trial Process (QTP) provides the technical platform to trial resilience services from new technology providers and provides a route to an enduring DS3 System Services market. It is a central piece of a much broader programme of work led by the TSO's to meet the objective from renewable energy in Ireland and Northern Ireland. As we increase the current operational limit, we have to increasingly rely on new technologies to provide the system resilience. Today, Ireland and Northern Ireland are addressing the challenges that Europe will likely see in the near future. Since 2017, we have proven a number of technology categories. However, there are still new and existing technologies that cannot participate in the central System Service arrangements, as they are not deemed to be proven from a service provision perspective or they do not adhere to the current standards and compliance requirements, as outlined within the DS3 System Services protocol document.

- *Question 7: In the design of the 2020 QTP trials, what technology groups do you believe the system operator should focus?*

9. Next Steps

9.1. Summary of Consultation Questions

- Question 1: Do you have any comments on the proposed FlexTech structure?
- Question 2: Do you have any comments on the Hybrid Technology work stream, the proposed priority areas and the order of those priorities?
- Question 3: Do you have any comments on the small scale and renewable generation work stream, the proposed priority areas and the order of those priorities?
- Question 4: Do you have any comments on the storage work stream, the proposed priority areas and the order of those priorities? Areas and the order of those priorities?
- Question 5: Do you have any comments on the demand side management work stream, the proposed priority areas and the order of those priorities?
- Question 6: Do you have any comments on the large-scale energy users work stream, the proposed priority areas and the order of those priorities?
- Question 7: In the design of the 2020 QTP trials, what technology groups do you believe the system Operator should focus?

9.2. Consultation Responses

We welcome feedback on the questions posed within this paper.
Responses should be submitted to FlexTech@soni.ltd.uk or FlexTech@EirGrid.com before the **4th of November 2019**. It would be helpful if answers to the questions include justification and explanation and are submitted within the questionnaire template provided with this consultation
It would be helpful if responses are not confidential. If you require your response to remain confidential, you should clearly state this on the coversheet of the response. We intend to publish all non-confidential responses.