



Via email:

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16<sup>th</sup> June 2023

## **Ref: Ofgem's Open Letter on Future Reform to the Electricity Connections Process**

Dear Connections Team,

RWE is leading the way to a green energy world. With an extensive investment and growth strategy, the company will expand its powerful, green generation capacity to 50 gigawatts internationally by 2030. RWE is investing €50 billion gross for this purpose in this decade. The portfolio is based on offshore and onshore wind, solar, hydrogen, batteries, biomass and gas.

RWE Supply & Trading provides tailored energy solutions for large customers. RWE has locations in the attractive markets of Europe, North America and the Asia-Pacific region. The company is responsibly phasing out nuclear energy and coal. Government-mandated phaseout roadmaps have been defined for both of these energy sources. RWE employs around 19,000 people worldwide and has a clear target: to get to net zero by 2040. On its way there, the company has set itself ambitious targets for all activities that cause greenhouse gas emissions. The Science Based Targets initiative has confirmed that these emission reduction targets are in line with the Paris Agreement. Very much in the spirit of the company's purpose: Our energy for a sustainable life.

### **Overview**

- Lack of grid infrastructure is the single biggest blocker to deployment of new low carbon power. Within this response, we set out a number of initiatives that we consider could help to tackle the issue. Attached to this response is a thought piece from RWE's U.K. Country Chair, Tom Glover on accelerating connections.

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- The short term strategies deployed by the Energy Network Association (ENA) under their '*Three Step Plan*' and the Electricity System Operator's (ESO's) '*Five Point Plan*' and additional measures to accelerate connections to the grid are broadly well-received but will require careful implementation and considered stakeholder engagement.
- In the Electricity System Operator's (ESO's) '*Five Point Plan*', there is an initiative to introduce connection queue milestones in to construction agreements. RWE is supportive of the principle of providing the system operator with the tools to remove stalled projects from the connection queue that will better enable an efficient connection process for projects which are demonstrably progressing towards completion.
- RWE would welcome wider engagement from Ofgem, the ESO and the ENA on how they intend to plan the network for battery storage amidst concerns that network operators will not be obliged to always offer the battery projects the option for a firm connection as well as the proposed interruptible, non-firm connection option on intact networks.
- We ask Ofgem and the System Operator to consider how they will develop an engagement strategy with stakeholders on a whole system basis so that there is equal engagement experienced by both distribution and transmission stakeholders and there are not silos where information is not accessible by all.
- Under connection reform, we encourage Ofgem to partner with the ESO to consider the lessons learnt from other mature markets, such as the U.S. gated connection approach and the Irish market that has only relatively recently adopted this system.
- Under planned and co-ordinated connections, RWE put's it's support behind the principle of introducing Regional System Planners (RSPs) to plan a coherent and co-ordinated network that works with a regional whole system strategic plan to meet national and local net zero ambitions.

I hope you find this response useful, if you have any questions or would like to discuss any of our response further, please do not hesitate to contact me.

Yours Faithfully,

**Claire Hynes**  
Industry Codes Manager



On behalf of RWE Renewables & RWE Supply & Trading GMBH

## **The Nature and Priority of Connections Issues (The challenge)**

### **ENA ‘Three Step Plan’ and ESO ‘Five Point Plan’**

#### **Short Term Initiatives**

Lack of grid infrastructure for connection is the single biggest blocker to deployment of new low carbon power. The short term strategies deployed by the Energy Network Association (ENA) under their ‘Three Step Plan’ and the Electricity System Operator’s (ESO’s) ‘Five Point Plan’ to speed up connections to the grid are broadly well-received.

We welcome ESO’s recent announcement that they anticipate 70% of the pipeline of connecting projects, who currently have a connection date after 2026 being able to connect between 2 and 10 years earlier. We look forward to industry being kept informed of progress ahead of March 2024, when ESO sets out improved dates will be communicated to existing projects that can benefit.

To implement the above approach the Electricity System Operator (ESO) introduced a ‘two step offer’ process where they could batch connection applications and analyse how they could offer the best possible connection date against an unchanging background of existing contracts which had been updated with the latest modelling for storage, attrition and connection rates. The process involves an initial “light” offer in the first three months and the final offer with the best possible connection date up to 9 months later. Although we support potential connectees being offered the best connection date, we are concerned that the two step offer process opens itself up to an increase in speculative connection applications as liabilities will not apply until the second stage of the process and the cost of submitting an application for a grid connection offer is not prohibitive (as the size of the current connection queue attests to).

We have set out a number of initiatives below that we consider could help to tackle the issue and could be developed further by Ofgem in co-ordination with the system operators. Attached to this response is a thought piece from RWE’s U.K. Country Chair, Tom Glover, on accelerating connections.

**Greater Transparency of Connection Availability:** Poor visibility of network availability is a material issue, meaning developers must place multiple applications to find a viable site. Further consideration should be given to improving the transparency relating to opportunities to connect and connection timescales (building on the work taking place under the connection reform process). In addition, high-tech approaches for the application process could reduce the preapplication workload and automatically produce offers.



**Higher / Earlier Connection Liabilities:** Currently, the cost of applying for and holding a connection agreement is extremely low, and the limited cost of holding the place in the queue encourages parties to hold the agreement, even if the project is unviable or delayed until the last possible moment the liabilities increase. Higher upfront costs, or higher and earlier liabilities for grid connection agreements would mean that only viable projects with a high chance of commitment would apply for and hold connection agreements.

At this point, parties can then modify the agreement until a later date – NGESO confirmed that 30% of the workload in 2022 was driven by modifications to existing contracts. Higher upfront costs, or higher and earlier liabilities for grid connection agreements would mean that only viable projects with a high chance of commitment would apply for and hold connection agreements, and there would be a clear incentive to hand back agreements if projects become uneconomic/unviable.

An obvious disadvantage of this approach is that development costs would increase due to higher upfront grid costs. The recently launched '*two-stage offer process*' for England and Wales whereby developers can take a place in the queue without having to place any securities risks further exacerbating this issue as we highlight elsewhere in this response.

**Allowing Parties to 'Trade' Connection Capacity:** A more market-based approach would be to allow parties to '*trade*' connection capacity. For example, if one onshore windfarm is progressing more quickly, or is more economically feasible (i.e. larger, newer technology), but is behind in the queue, they should be able to come to a commercial agreement to trade places. Equally, a new offshore windfarm could pay an old gas station to close earlier and take over its grid capacity.

Further consideration could be given to any restriction of tradeable MWs between technologies (i.e., XMW of offshore wind may only be equal to YMW of a gas station) and between locations (i.e., if the bottleneck on the network is a long way from the generator selling its grid capacity, then there may be multiple locations where the generator buying the grid capacity could choose to connect (i.e. it wouldn't necessarily have to be right next door).

**More Flexible and Commercial Arrangements for Grid Entry:** Instead of building a new connection, two users (e.g. an existing gas station with a firm connection, and a new offshore wind farm) could agree to share the same grid capacity - when it's windy, the windfarm uses the capacity, and vice versa the gas station. The windfarm would be prepared to compensate the gas generator for lost income, in exchange for getting onto the grid earlier.

As a simple example, an offshore windfarm may not be able to get an early connection agreement because of a lack of grid capacity in the location. However



when looked at in detail, this may be because the grid capacity was held by a number of older gas stations. In reality though, in windy conditions, it is highly unlikely the gas stations would run, and if they did likely margins would be small.

The first issue is that the current grid security standard (known as the Security and Quality Supply Standard – SQSS) does not adequately consider this happening. Reviewing and updating this element of the SQSS is urgently required.

Further, a more efficient commercial arrangement than building a new connection could be for a gas station and an offshore windfarm to agree to share the same grid capacity, and in doing so commit to the ESO never to jointly export any more than that capacity. Therefore, put simply, when it's windy the windfarm would use the capacity, and vice versa the gas station, with the windfarm getting priority despatch due to its low carbon and low marginal cost status. In this scenario, the windfarm would be prepared to pay the gas generator any lost income, in exchange for getting onto the grid earlier.

From a consumer perspective, these kinds of commercial arrangements could be attractive because low cost, low carbon generation would potentially come on earlier, and ultimately localised increases in grid capacity (and therefore new infrastructure) may be reduced, or even not be required at all. Permitting and facilitating commercial arrangements to allow more efficient optimisation of grid connections between assets in this way would accelerate connections and facilitate a lower cost transition to net zero.

Facilitating such commercial arrangements as those illustrated above would allow for a more efficient optimisation of grid connections between assets and accelerate connections. Low cost, low carbon generation would potentially come on earlier, and ultimately localised increases in grid capacity (and therefore new infrastructure) may be reduced, or even not be required at all.

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## **The Illustrative Reform Stages and Options for Consideration (Annex B).**

### **Stage 1: Incremental improvements**

#### **ESO's 'Five Point Plan'**

##### **Introduction of Transmission Connection Queue Milestones**

RWE is supportive of the principle of the system operator being able to remove genuinely stalled projects from the connection queue to better enable an efficient connection process for projects which are demonstrably progressing towards completion. It also provides greater clarity to the developer on the System Operators project progression expectations at different stages of the process and the enabling of constructive conversations with the system operator on the evidence of any challenges faced. We also recognise and support the alignment of transmission and distribution connection queue milestones to provide a whole system connection management process which is in keeping with the ESO's new role as Future System Operator (FSO).

However, a measured, pragmatic and common sense approach should be taken to the implementing of connection queue milestones to prevent projects being terminated for reasons beyond the control of a developer. If a perception of risk develops or if in actuality there is a material risk of projects being terminated without proper discussion of their evidence for delay, the risk would become priced in, which will ultimately result in a greater cost to the consumer.

RWE considers that the ESO should have carried out an impact assessment as part of their code administration duties for two reasons:

- a. to increase their awareness of projects' *'routes to market'* (eg CfD, Capacity Market, PPA) and how they interact with the connection queue milestones; and also
- b. due to the proposal of retrospectively applying milestones to connection agreements. An impact assessment could have looked into whether projects later in the queue are competitively disadvantaged by being required to facilitate the milestones in their connection agreement versus projects with notification at an earlier stage of development and in what scenarios. If the change is approved with this implementation approach we encourage ESO to undertake such work to better inform the implementation of this practically.

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Connection queue milestones are expected to play a pivotal role in proposals put forward as part of connection reform. Now is our opportunity to get it right.

Given the grid delays that are currently being experienced by developers (e.g. grid offers for connection in >10 years' time) we recognise the need to evolve and address the challenges, and urge Ofgem and NGESO to ensure that this proposal is implemented in such a way that it provides a more efficient connection queue and acts as a disincentive for speculative/stalled projects.

**Flexible Capacity – The New Non-Firm Connection Option for Storage Projects At Distribution and Transmission Level (ENA ‘Three Step Plan’ and ESO’s Additional Measures to the ‘Five Step Plan’)**

>50 GW of battery energy storage is contracted to connect to the distribution network, >40 GW of energy storage is contracted to connect to the Transmission network, and with >60 GW of Transmission contracted hybrid projects which include energy storage. The contracted capacity exceeds the energy storage requirement indicated in all of National Grid Electricity System Operators (ESO's) Future Energy Scenarios. Instead of creating a plan of how to strategically connect battery projects, both bodies are pursuing a policy of introducing a non-firm connection offer that has the ability to interrupt a battery on an intact network rather than only when the network is congested. This has been introduced under the guise of speeding up other connections. If this is the only connection offer proffered, it fundamentally undercuts the ability for a battery project to have a reliable business case, equal treatment to other technologies, and could reduce the main benefit of battery storage to manage demand and volatility from increasing renewable technologies on the grid whilst transitioning to net zero.

As more renewable technologies connect to the grid, the ESO will see load factors increasing. Energy storage should be treated consistently across all assets in that class, for example the similar operation of pumped storage which is required to generate electricity when prices are high, and operate as demand, pumping water back in to the reservoir when prices are low. The same principle can be applied to discharging and recharging a battery. While the annual load factor may be 10-20% for each of export and import, availability to participate in intraday markets, responding to real time signals to support the network, is increasingly important. Load factors will also vary between assets of different duration classes, and would be expected to increase as more inflexible generation is added to the system. For this reason, it would be preferable from the asset owner's perspective to have a firm connection with the ability to offer back capacity to the network operator, as opposed to the network operator seeking to apply an as of yet undefined curtailment. The network operator should not be myopically looking at its 2030 targets but instead be looking at the opportunity to strategically plan and build a





network of batteries early that can offer services to balance the volatility of renewable technologies coming on line out to 2050.

Whilst we recognise the solid work the ESO undertook by modelling and updating the treatment of battery storage across the transmission network, we are concerned that this short sighted proposal was published without wider engagement with the industry and does not reflect the thought transition expected for the ESO's new role as an independent Future System Operator (FSO) planning the future energy system or newly proposed role of '*market facilitator for flexible resources*' in Ofgem's recent '*Future of Local Energy Institutions and Governance*' consultation. Instead, this policy appears to be lifted from the ENA '*Three Step Plan*' created by a closed door group of distributors and transmission operators. This does not reflect the open governance engagement that we would hope to see and causes greater concern when you consider the wider picture of the proposed dismantling of the framework of code panels and boards under Code Reform. Panels and boards have long provided oversight with an understanding of the impact of proposed changes on important stakeholders to industry bodies and we have yet to be provided with a plan for an adequate replacement. Engagement should be increased rather than reduced in times of significant change in key policy areas such as Connections.

We would welcome wider engagement from Ofgem, the ESO and the ENA on how they intend to plan the network for storage and especially before publishing policies without making it clear that legally the networks will be obliged to always offer the battery projects the option for a firm connection as well as non-firm connection options. All non-firm connection options proposed should take consideration of the utilisation of the battery and should stipulate a cap on interruptions to allow asset owners to risk assess the impact on their business case. To ensure fairness of treatment, there are devices that allow the developer to monitor congestion to ensure that all interruptions are within the limit of the cap, should they wish to do so. This would provide confidence that the network operators are operating within the limits and understand the commercial impact on the battery storage project.

Due to the number of different types of non-firm connections now available in the market, we would welcome the introduction of whole system network guidance on non-firm connections. It should cover the broad spectrum of non-firm connection options for plant that is requested to be: turned off, turned down, has timed windows, notice is given within day or for part of hours, day ahead notification or has yearly set windows of unavailability. Due to the wide number of combinations available, we suggest that system operators consider offering standardised products in a similar way to the inter-trip process. In the inter-trip statements, there can be different classes of non-firm that come in different standard configurations.





### **ENA's 'Three Step Plan'**

#### **Reforming The Distribution Network Connections Queue, Promoting Mature Projects That Are Closer To Delivery Above Those That May Be 'Blocking' The Queue**

RWE is supportive of 'shovel ready projects' being progressed where there is no detrimental impact to other projects ahead of them in the connection queue or need for enabling works at transmission or distribution level. If reinforcement works were required to facilitate the connection then it would, in all likelihood, require the redesigning of the connection and the enabling works of a number of projects to accommodate it which would cause delay and detrimentally impact other projects.

The ENA Strategic Connections Group have shared a combined figure of 7 GW to be accelerated or removed from the queue by the processes of promoting shovel ready projects and adding the distribution connection queue milestone to pre-2017 connection agreements. It would be useful to understand how that breakdown applies to 'shovel ready projects' being progressed to better understand how effective dynamic queue management is. How successful this process has been for the distributors and lessons learnt could be utilised to examine how effective the process could be at the transmission level and feed in to Ofgem's decision on the alternative changes that incorporate dynamic queue management in CMP376 'Inclusion of Queue Management process within the CUSC'.

RWE encourages distributors to engage in constructive conversation with developers when they are bilaterally negotiating the distribution connection queue milestones in to pre-2017 connection agreements. A measured, pragmatic and common-sense approach should be taken to the implementing of connection queue milestones to prevent projects that would otherwise be progressing from being terminated for reasons beyond the control of a developer.

### **Stage 2: Improving Transmission/Distribution Interface**

#### **New Co-ordinated Connections Approach for Transmission and Distribution Networks**

RWE welcomes co-ordination between the distribution network operators and the Electricity System Operator (ESO) to better manage connections within agreed technical limits at each boundary point from July 2023. There has been a gap in interface arrangements between the transmission and distribution networks for some time as the network operators have largely acted in isolation. This shift in perspective allows for greater visibility of the capacity available and co-ordination for projects connecting at the boundary that require both a distribution and transmission connection.



### **Stage 3: Controlled access**

#### **ESO's Connection Reform**

Co-ordinated projects participating in the Holistic Network Design (HND) are not part of the '*first come, first served*' connection queue process that connection queue milestones are being applied to. These offshore wind projects are waiting with anticipation on the broader connection reform work that ESO propose to kick-off this summer to better understand how interdependent projects with shared works will be managed through the connection process. The '*cluster*' style connection approach favoured by U.S. system operators appears a good fit with the requirements for Offshore wind farms and is worthy of further exploration. We encourage Ofgem to partner with the ESO to consider the lessons learnt from other mature markets such as in the U.S. gated connection approach and the Irish market that has only relatively recently adopted this system.

Further consideration should be given to the concept of providing a land lease at the grid application stage in tandem with the redesign of the connection process for all technologies. In the U.S. market, there are system operators, such as the California Independent System Operator (CAISO) who run a generation interconnection process that require project applications to pay a fee in lieu of site control (land lease) or alternatively provide the land lease for the site at the connection application stage. We suggest that NGESO undertakes a comprehensive review of the site control evidence required to ensure fair treatment against the structure of the redesigned connection process and consider the advantages and disadvantages of the site control options and any lessons learnt from the U.S. system operators under GB Connection Reform.

We recognise that some U.S. system operators choose to utilise regional TEC auctions alongside their existing connection process. This allows the system operator to offer TEC that is available on the grid without any requirement for reinforcement works to make the connection. We can also see from the system operator's point of view, the benefits for the purpose of co-ordinating the deployment of flexible assets on the grid where they are needed. However, the vast majority of technology is deployed in locations driven by other requirements; such as in locations where there is suitable wind speed/irradiance, available land onshore and where The Crown Estate / Crown Estate Scotland has put up seabed for lease offshore rather than where there is TEC available on the grid. Furthermore, there is a risk where a regional TEC auction has been announced that developers buy up the land in a form of bed blocking to ensure that they are successful at the auction. For regional TEC auctions to be successful, there would need to be a control mechanism around the use of compulsory purchase orders on land and land would need to be sanitised from the decision. The current regulatory environment does not support this.



There could be an increased role in planning the grid connections where you bundle technologies into various areas such as hydrogen areas, with a crown estate land lease and the currently proposed funding mechanism loosely based on CfD AR4 to progress investible projects quickly.

RWE looks forward to the ENA's Strategic Connections Group publishing their views on the options they are exploring to reform the distribution connection process. We would encourage the ENA to act in concert with the distributors to host a stakeholder forum where impacted parties can ask questions and provide their industry expertise to help develop solutions.

We ask Ofgem and the System Operators to consider how during a transition to a whole system based connection management system, you will develop an engagement strategy with stakeholders on a whole system basis so that there is equal engagement experienced by both distribution and transmission stakeholders and there are not silos where information is not accessible by all. Any form of engagement decided upon should keep in mind that the majority of stakeholders will have a preference on whether they engage at distribution or transmission level and may not engage in both.

#### **Stage 4: Planned & Co-ordinated Connections**

RWE agrees that the preferred connection process determined under connection reform will need to be able to be integrated with various workstreams, such as the introduction of the Future System Operator (FSO), any changes to locational signals from REMA and planning for grid. We are supportive of the development of a Central Strategic Network Plan (CSNP) that plans and anticipates the need for future grid for renewable generation and we will be responding to Ofgem's CSNP consultation reviewing data inputs for modelling supply and demand.

RWE welcomes co-ordination between the Distribution Network Operators (DNOs) and the Electricity System Operator (ESO) to better manage connections within agreed technical limits at each boundary point from July 2023. This is a first step in creating a whole system connection management approach as it provides greater visibility of the capacity available and co-ordination for projects connecting at the boundary that require both a distribution and transmission connection.

RWE is supportive of the principle of Regional System Planners (RSPs). When the concept of Distribution System Operators (DSO's) was first introduced, the distributors were aware of the need to transform, co-ordinate and plan the distribution network holistically rather than just their individual licenced areas. The distributors did not reach alignment on aspects such as a single common connection platform that could be utilised by customers. We therefore consider it is acceptable that the Regional System Planners (RSP's) role should be carried out by a separate independent party to facilitate those discussions more broadly between DNOs, Gas Distribution Networks (GDNs) and Local Authorities (LA's) to plan a



coherent and co-ordinated network that works with a regional whole system strategic plan to meet national and local net zero ambitions. This function will be essential for distributors to create a whole system distribution connection management approach.

### **Priority Areas of focus for Ofgem and Proposed Objective, Outcomes and Guiding Principles**

We broadly agree with the priority areas of focus and objectives proposed. In particular, we agree that connection reforms should not automatically be ruled out if they cannot be delivered by 2025 but consider that reform is an ongoing process and should not be considered from a purely linear standpoint. For example, there will be other short-term initiatives that will be identified such as utilising dormant TEC below or those discussed earlier in this response. Also, if there is a role for regional TEC auctions then the regulatory framework may take some time to be put in place, but it could be delivered in isolation to the main connection process and may extend beyond 2025. There should always be an overarching plan that contains an assessment of qualitative benefits to provide the best outcome for planning and delivering grid with realistic goals rather than a constrained timeframe for delivery out to 2025 which omits beneficial opportunities.

**Dormant TEC:** A further short-term measure that could be considered is the utilisation of dormant TEC to allow projects to connect earlier. This is where dormant stations have provided their notice period, up to 2 years before they drop-off the transmission system. The purpose of this notice period is to prevent planned for TEC income being missed leaving a gap in the ESO's budget. However, if instead on receiving the notice, the ESO assesses whether there is a project that could connect earlier and utilise the TEC, they could agree to waive the fee for the notice period with the developer from the date the new project comes on-line. This approach would be a more economic and efficient use of the network.

Connection reform is likely to deliver a significant step change in process largely due to the needs case for new technologies not being reviewed for connecting to the grid and incremental changes not being made to the system. We would encourage Ofgem to ensure that the reports and data assumptions utilised providing a view of the requirements for new grid are held under regular periodic review to prevent this paradigm shift being required again.