Making a positive difference
for energy consumers

To network operators, generators
and other interested parties

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Dear colleagues,

Call for evidence: Visibility of distributed generation connected to the GB distribution networks

On Friday 9 August 2019, a power outage caused interruptions to over 1 million consumers' electricity supply. As part of our review of the event, we presented a series of findings and recommendations to improve the resilience of the GB electricity system.[1]

We stated that there is a shortfall in the collection and recording of real time data associated with distributed generation. A large volume of distributed generation (DG) tripped or deloaded during the event, but evidence of which specific generators were affected, the total reduction in output, and the actual cause of this was very limited. We concluded that Distribution Network Operators (DNOs) lack consistent and complete information on the operational characteristics and performance of distributed generators connected to their networks.

We expect there to be a number of benefits to improved visibility of DG. Our '*9 August Power Outage Report'* recommended that there is consideration given to the value of DG visibility for network resilience, and for the delivery of a number of distribution system operation (DSO) functions. In our 'DSO Position Paper' we defined DSO as the effective delivery of multiple functions and processes in the distribution network to manage the system and network, and stated that these functions may be delivered by parties other

[1] https://www.ofgem.gov.uk/publications-and-updates/investigation-9-august-2019-power-outage

than the DNOs or ESO.[2] Our recent RIIO-ED2 Sector Specific Methodology Consultation outlined the DSO functions we want DNOs to fulfil in the current and next price control.[3]

This call for evidence focusses on the visibility of DG connected to the GB distribution network, and associated data, for the purposes of system resilience and DSO. We are not considering the wider question of general network visibility, nor do we seek to give or receive a commentary on existing practice. We invite your views on improvements to standards and practices, including industry codes, licences and governance, which could be adopted to improve the visibility of DG connected to the GB distribution network; your views will inform evidence-based policymaking.

The questions we seek evidence on, the background to this call for evidence, and a description of the points to consider when responding, are set out in the annexes below.

Next Steps

The aim of this call for evidence is to seek stakeholder views and evidence; from this we will work with industry to develop an action plan to address any identified areas of improvement. We welcome responses to this call for evidence; please send any comments by email to flexibility@ofgem.gov.uk on or before 18 September 2020.

Yours faithfully,

Steve McMahon
Deputy Director, Electricity Distribution & Cross Sector Policy

[2] https://www.ofgem.gov.uk/publications-and-updates/ofgem-position-paper-distribution-system-operation-our-approach-and-regulatory-priorities
[3] https://www.ofgem.gov.uk/publications-and-updates/riio-ed2-sector-specific-methodology-consultation

Annex 1 - Questions

We invite your views on the following matters:

- DCUSA modification DCP350 will provide data on a number of characteristics for DG greater than 1MW. Are there additional characteristics for DG, such as real-time MW/MVAr output, load factors and protection settings, which would aid in the prevention of, live management, and recovery from loss of supply events?

- What value will these additional characteristics provide to improving the planning, security and real time operation of the GB transmission and distribution systems?

- What value will the above characteristics provide to improving DSO function delivery by the DNOs or other stakeholders? DSO functions may include network management, flexibility procurement, and service conflict avoidance.

- At what temporal resolution (instantaneous, seconds, minutes etc.) would real time data on DG be valuable to improve the resilience of the GB electricity system in the prevention of, live management, and recovery from loss of supply events?

- What investment would be required for monitoring, collecting, storing and disseminating real time operational data associated with DG? Which party should be responsible for these investments? How does this vary, based on the size of visible DG at 1MW or 50kW?

- What are the credible technical, regulatory (industry codes, licences and governance) and legal barriers and costs associated with increasing the data collected, stored and shared regarding DG operations, and in obligating parties to do so?

Annex 2 - Background and context

A secure and reliable energy supply is a key consumer outcome for the sector, a principal objective for Ofgem as the energy regulator, and an important consideration for the future in an evolving electricity system.

On Friday 9 August 2019, a power outage caused interruptions to over 1 million consumers' electricity supply. Several other services were disrupted due to the affected service providers' own safety systems or problems with their back-up power supplies. The rail services were particularly badly affected with more than 500 services disrupted.

Our lower bound for total estimated DG lost across the event is 1,300MW, and the loss could be as high as 1,500MW. There is a significant possibility that this volume is in excess of the transmission connected generation lost during the event (approx. 1378MW). The event on the 9th August demonstrates the scale of the visibility issue surrounding DG, where there was significant unexpected loss of DG.

Based on the shortcoming of 9 August 2019, Ofgem's review we recommended the following action:

> *Action 8: As part of the DSO key enablers work, Ofgem should consider options to improve the real-time visibility of distributed generation to the DNOs and the ESO.*
>
> *This review should consider modifications to industry codes and the distribution licences, and requirements for investment in real-time monitoring and control systems. It is timely to consider moving to more granular operational monitoring of distributed generation, given the issues identified in our findings on the lack of visibility of distributed generators' performance on 9 August, and given DNOs are required to operate networks with more active storage, generation and demand. There are synergies with our DSO key enablers work so it is appropriate to include this action within the scope of that programme.*

Points to consider and existing initiatives

We recently published our decision to approve DCUSA code modification proposal DCP350.[4] This modification requires DNOs and IDNOs to create a public standardised register of all distributed energy resources (DERs) larger than 1MW that are connected to, or have an agreement to connect to, their networks. DERs include distributed generation, storage and demand sites that have a contract to provide Demand Side Response/Management. This modification aims to improve market transparency, not to improve security of supply.

Proposed grid code modification GC0139:[5] '*Enhanced Planning-Data Exchange to Facilitate Whole System Planning*', seeks to increase the scope and detail of planning-data exchange between DNOs and the ESO to help facilitate the transition to a smart, flexible energy system. This modification proposes to enhance and align certain data exchange processes, providing greater granularity of data on a range of operating conditions; this will help facilitate improved coordination and more efficient planning of the networks for all parties. This modification is at the workgroup stage, but it has the potential to increase the visibility of the operational characteristics of DG.

Responses to our recent informal consultation on Distribution Standard Licence Condition 25, the Long Term Development Statement (LTDS), suggests there is industry appetite to move to a Common Information Model (CIM) based sharing of network data including DG.[6,7] We will set out our next steps on reforms to the LTDS in quarter three of 2020. It may be the case that the exchange of operational characteristics and certain performance aspects of distributed generators is also better facilitated by exchange of consolidated CIM models. This is a relevant consideration for DG data sharing.

At an overall strategic level, the modernising energy data (MED) group are delivering a programme of work following on from the 2019 Energy Data Taskforce report.[8,9] This work includes an energy data visibility discovery,[10] designed to better understand data visibility across the industry with the intention to develop towards a common data register, including DG. This work should be considered at a strategic level.

[4] https://www.ofgem.gov.uk/publications-and-updates/dcp350-creation-embedded-capacity-registers
[5] https://www.nationalgrideso.com/document/164051/download
[6] In electricity transmission and distribution, the Common Information Model (CIM), is a standard which defines a common vocabulary and basic ontology for aspects of the electric power industry.
[7] https://www.ofgem.gov.uk/publications-and-updates/key-enablers-dso-programme-work-and-long-term-development-statement
[8] https://modernisingenergydata.atlassian.net/wiki/spaces/MED/overview
[9] https://es.catapult.org.uk/reports/energy-data-taskforce-report/
[10] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/11454

The Energy Networks Association's (ENA) have explored data change requirements between networks and other stakeholders through a range projects. These include the Open Networks Project assessment on *'Real Time Data Exchange & Priority of Actions'*,[11] which outlined changes required based on trials from Regional Development Plans. The ENA's Data Working Group are considering how energy network licensees across electricity and gas can improve their data management. Their initiatives include the development of a digital systems map, which may hold DG data, and should be appropriately considered.

[11] https://www.energynetworks.org/electricity/futures/open-networks-project/workstream-products-2020/ws1b-planning-and-forecasting.html