

GC0134

Context and Initial Considerations

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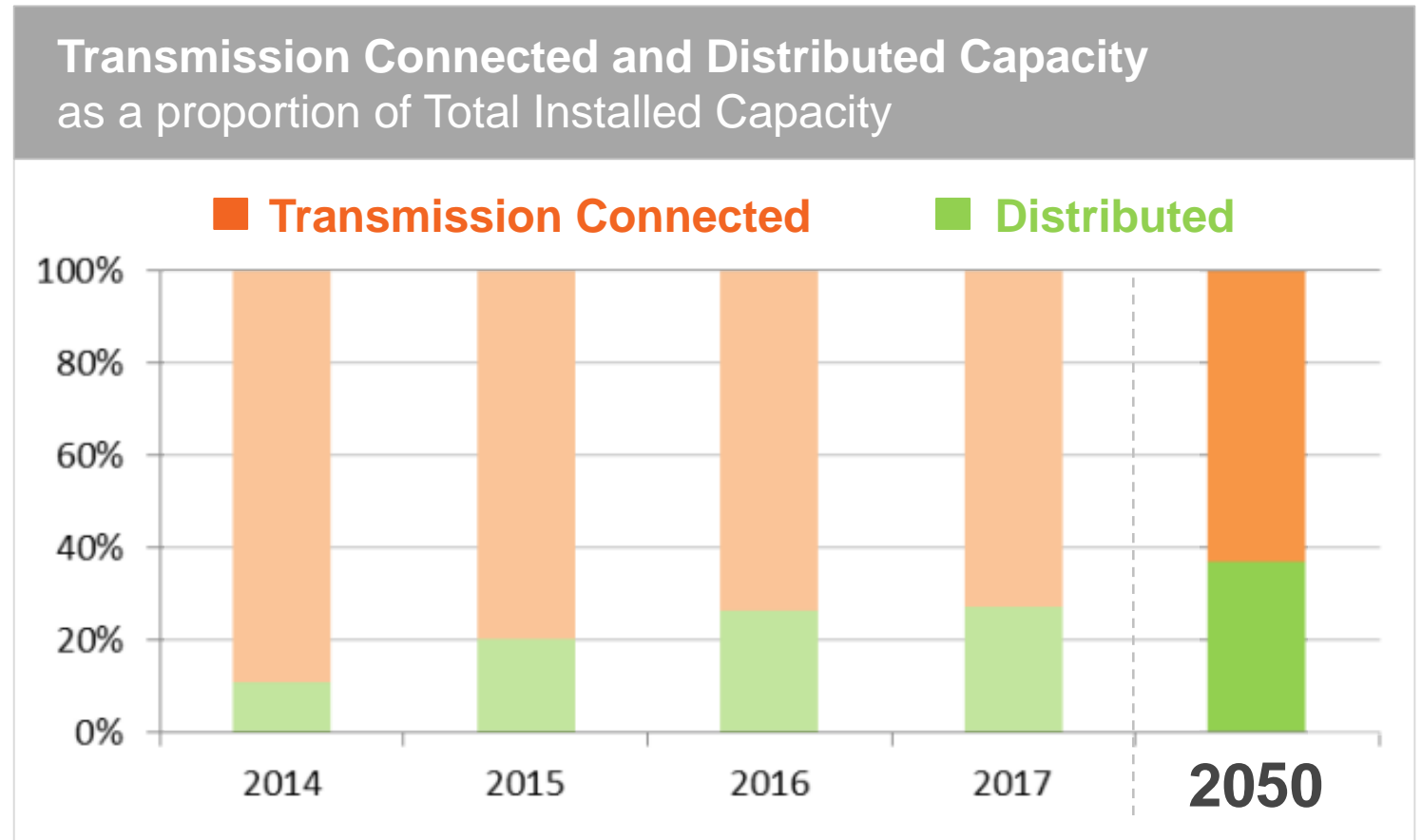


Embedded Generation is projected to increase significantly over the coming decades

In 2014, distributed generation made up **10%** of total installed capacity. By 2017 this had risen to **27%** and is projected to hit close to **40%** by 2050 (see right).

As overall generation capacity is also projected to increase, the absolute level of embedded capacity is expected to increase from **31GW** today to **48GW** in 2030.

SOURCES: [NGESO Wider Access Roadmap](#) & [RIIO-2 Business Plan 2021-23](#)



What is Control Telephony?

The Control Telephony Network is a highly resilient private telephony network used to carry Control Calls for both the day-to-day management of the GB Transmission System, and for contingency or emergency purposes including Black Start.

- It is designed to be robust in the event of a complete system shutdown and to remain operational for at least 24/48 hours (depending upon the User), even where a complete system shutdown has occurred.
- There is no reliance on the PSTN (the traditional public telephone network) which may suffer congestion during power blackouts or other events affecting the general public.
- Control Telephony is installed and funded by ESO (in coordination with the relevant Transmission Licensees).

What is System Telephony?

System Telephony is an alternative method for communication between ENCC and a User for the purposes of control of the Total System in both normal operating conditions and where practicable, emergency operating conditions.

- A full Control Telephony system is not practical at some sites, so ESO assesses if use of System Telephony can be permitted on a case by case basis and only permit its use where it considers that it is not practicable to install Control Telephony and there would not be an adverse impact on the total system.
- System Telephony uses the PSTN (Public Switched Telephone Network) i.e. the BT Network and therefore has less resilience than the Control Telephony network. However, System Telephony does have advantages over Control Telephony at remote sites where there is greater coverage than the Control Telephony System.
- System Telephony is funded by the User for monthly rental and call charges, and must be manned 24/7, with some exceptions which are mainly for embedded Large users in Scotland under 100MW (CC/ECC 7.9).

What are Control and System Telephony used for?

Consider how these procedures will be impacted by this proposal

Function	Detail
BAU dispatching of Bids and Offers for non-active BM participants (i.e. those Users that do not have EDL)	Communication between ENCC and non-active BM participants to operate the BM / dispatch BM actions
ENCC planned outages of BM systems (includes all electronic data communication facilities)	The system is taken offline for a 4-hour period each month. At these times, ESO dispatches via Telephony as the backup method.
Backup for unplanned outages	Communication between ENCC and Users during ENCC/User unplanned outages or IT failures, as per BC2.9.7
Emergency / Black Start	For Black Start providers, Control Telephony would be used and must have 48-hour redundancy.
Ancillary Services	Telephony is required for instruction of certain ancillary services

Existing Thresholds for context

Threshold	Used for	Detail
<100 MW	Wider Access to BM for embedded Users	Wider Access has made it easier for VLPs and units of below 100MW to access BM
100 MW	Lower limit for mandatory participation in BM	In general, in SHE Transmission and SPT, Large Embedded Power Stations will have to meet the requirements of BC.1 and BC.2, which applies to Generating Units, not BM Units, unless registered as BEGAs.
<300 MW	Interim upper limit for: <ul style="list-style-type: none">• Wider Access API (instead of EDT/EDL)• Replacement Data Concentrator (instead of Operational Metering)	300MW is also the magnitude of the maximum loss of infeed, for System Frequency to remain within Operational (49.8Hz, 50.2Hz) Limits

What's currently in code?

Obligations in respect of Control Telephony and System Telephony:

Grid Code CC.6.5.4.1–3 (and ECC.6.5.4.1–3)

CC.6.5.4 Obligations in respect of Control Telephony and System Telephony

CC.6.5.4.1 Where **The Company** requires **Control Telephony**, **Users** are required to use the **Control Telephony** with **The Company** in respect of all **Connection Points** with the **National Electricity Transmission System** and in respect of all **Embedded Large Power Stations** and **Embedded DC Converter Stations**. **The Company** will have **Control Telephony** installed at the **GB Code User's Control Point** where the **GB Code User's** telephony equipment is not capable of providing the required facilities or is otherwise incompatible with the **Transmission Control Telephony**. Details of and relating to the **Control Telephony** required are contained in the **Bilateral Agreement**.

CC.6.5.4.2 Where in **The Company's** sole opinion the installation of **Control Telephony** is not practicable at a **GB Code User's Control Point(s)**, **The Company** shall specify in the **Bilateral Agreement** whether **System Telephony** is required. Where **System Telephony** is required by **The Company**, the **GB Code User** shall ensure that **System Telephony** is installed.

CC.6.5.4.3 Where **System Telephony** is installed, **GB Code Users** are required to use the **System Telephony** with **The Company** in respect of those **Control Point(s)** for which it has been installed. Details of and relating to the **System Telephony** required are contained in the **Bilateral Agreement**.

Links to relevant Grid Code sections:

[Connection Conditions](#)

[European Connection Conditions](#)

NGESO interpretation of Grid Code CC.6.5.4.1–3 and ECC.6.5.4.1–3

1. Generation and HVDC:

NGESO guidelines for which Users require Control Telephony (CT) or System Telephony (ST)

BM Participant?	Type of connection	CT	ST
	Embedded Small (non-BM)		
✓	Small Directly Connected (BCA – non-active)	✓	✓
✓	Small Directly Connected (BCA – active)		✓
✓	Small BEGA (BM - not active)		✓
✓	Small BEGA (BM - active)		✓
✓	Medium BEGA	✓	✓
	Medium (LEEMPS)		
✓	BELLA	✓	✓
✓	Large BEGA (embedded)	✓	✓
✓	Embedded HVDC and registered as a DC Converter Station and/or HVDC system with TEC	✓	✓

Potentially impacted by this proposal:
Small / Medium embedded BM Participants

NGESO interpretation of Grid Code CC.6.5.4.1–3 and ECC.6.5.4.1–3

2. Demand Users:

NGESO guidelines for which Users require Control Telephony (CT) or System Telephony (ST)

BM Participant?	Type of User	CT	ST
✓	DNO	✓	✓
✓	Supplier	✓	✓
✓	Non-Embedded Customer	✓	✓
✓	Virtual Lead Party (Embedded)	✓	✓
✓	Embedded Individual Demand Side Response Provider	✓	✓

} **Potentially impacted by this proposal:**
Embedded Demand Response Providers

What's currently in code?

Obligations in respect of 24/7 Telephony Coverage

Grid Code CC.7.9 (and ECC.7.9)

CC.7.9 **GB Generators** and **DC Converter Station** owners shall provide a **Control Point** in respect of each **Power Station** directly connected to the **National Electricity Transmission System** and **Embedded Large Power Station** or **DC Converter Station** to receive an act upon instructions pursuant to OC7 and BC2 at all times that **Generating Units** or **Power Park Modules** at the **Power Station** are generating or available to generate or **DC Converters** at the **DC Converter Station** are importing or exporting or available to do so.

The **Control Point** shall be continuously manned except where the **Bilateral Agreement** in respect of such **Embedded Power Station** specifies that compliance with BC2 is not required, where the **Control Point** shall be manned between the hours of 0800 and 1800 each day.

Schedule 1 of Appendix F5 of NGESO Bilateral Connection Agreement Template

Site Specific Technical Conditions - Communications Plant (ECC.6.5)

Description	Location	Source	Provided By	Comments
Control Telephone ECC.6.5.2 to ECC.6.5.5, ECC.6.5.8, ECC.6.5.9 and BC.1.4.1	Control Point	The Transmission Substation Exchange.	<p>The EU Code User to provide and install wiring from the EU Code User's Control Point to The Company substation exchange, and install free issue handset.</p> <p>The Relevant Transmission Licensee to provide communications path to the EU Code User's Control Point site (Great Britain only) in conjunction with the EU Code User. The Relevant Transmission Licensee to provide handset only.</p>	<p>Control Telephony provides secure point to point telephony for routine Control Calls, priority Control Calls and emergency Control Calls.</p> <p>If the EU Code User intends to have a nominated Trading Point/Control Point outside of GB, The Company will provide the communication routes and Control Telephony facilities to the EU Code User's Control point but will charge the EU Code User for the overseas element of this work including any ongoing regular maintenance.</p> <p>Any subsequent relocation of Control Point will be charged to the EU Code User by The Company.</p>
System Telephony PSTN (or other off-site communications circuits) for Telephony. (ECC.6.5.2 to ECC.6.5.5 and ECC.7.9, OC.7 and BC.2)	Trading Point, Control Point	Public Telephone Operator (PTO).	The EU Code User to provide a Control Point in accordance with ECC.7.9 of the Grid Code. Wiring to the Public Telecommunications Exchange including handset to be provided by the EU Code User.	<p>Data and speech services required by The Company shall be cabled from the EU Code User site to the Public Telecommunications Exchange. The EU Code User shall only use the PSTN facilities for voice communications with The Company as detailed in ECC.6.5.4.5 and ECC.6.5.5.2 of the Grid Code.</p> <p>The EU Code User's control point must be immediately and directly contactable by The Company at all times and operators should be able to communicate in clear plain English.</p>