

GENERATION AVAILABILITY & NETWORK CAPACITY USER GUIDE

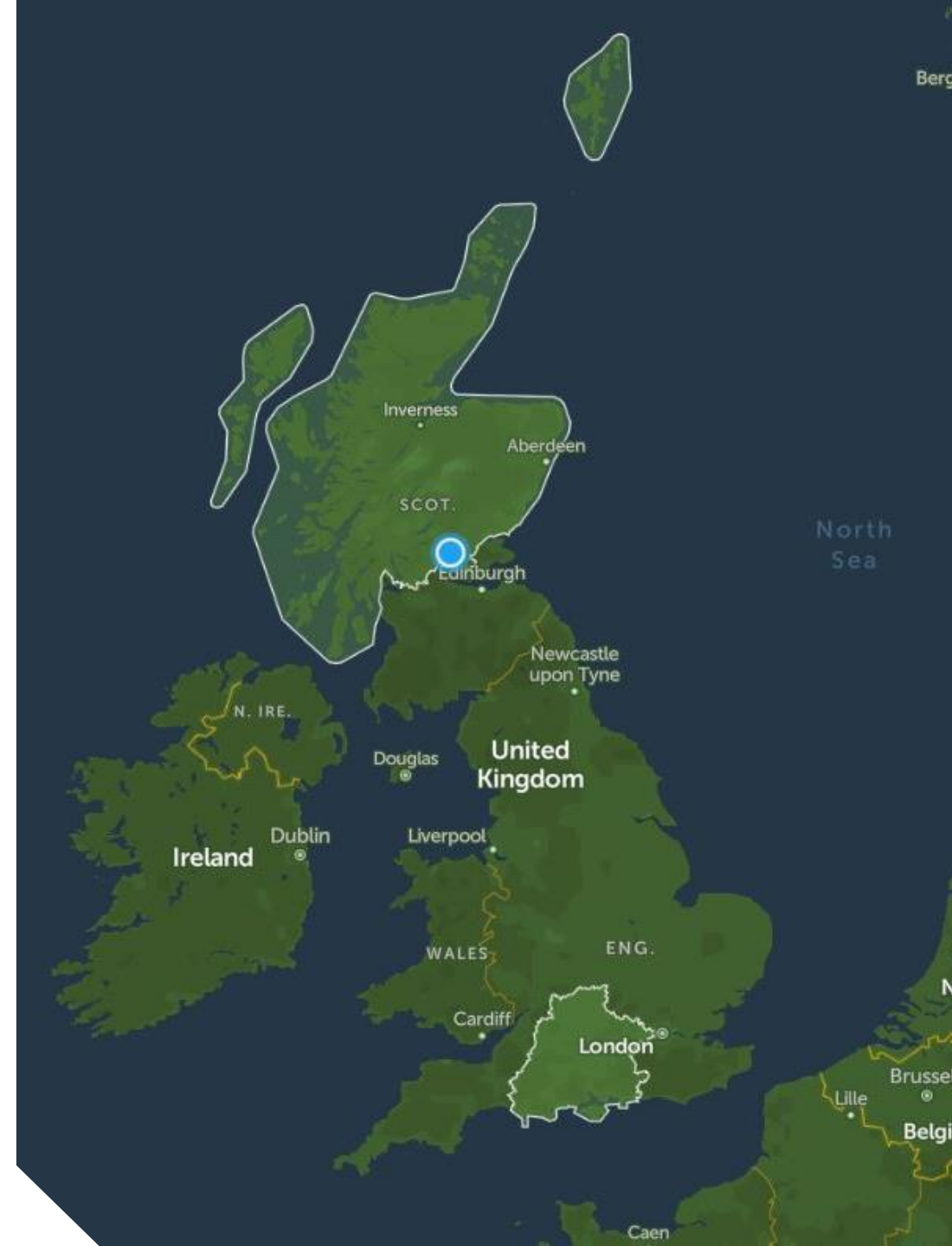


Scottish & Southern
Electricity Networks



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INTRODUCTION

Our network maps provide an indication of our networks capability to connect loads greater than 200amps and generators applying under the G99 process to major substations. Our maps give constraints down to primary substation level only. For larger projects we may need to carry out work to connect your generator. We recommend engaging with us at an early stage to understand the timescales and costs involved.

Our maps will give you an indication of the network's capability and better understanding of potential opportunities to connect to our network.



UNDERSTANDING THE GENERATION AVAILABILITY MAP



Scottish & Southern
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GENERATION AVAILABILITY: MAP OVERVIEW

Generation Availability

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BACK TO SSEN

Search Map

Unconstrained GSP, Partially Constrained GSP, Constrained GSP, Unconstrained BSP, Partially Constrained BSP, Constrained BSP

Generation Availability		
Unconstrained	Constrained	Partially Constrained
36	123	20

GENERATION AVAILABILITY | NETWORK CAPACITY

Scotland

- Grid Supply Points
- Substations

England

- Grid Supply Points
- Bulk Supply Points
- Substations

Filter

Close summary bar

Toggle between our Generation Availability and Network Capacity maps

Key – Information on constraint levels at Grid, Bulk and substation supply points

Downloads – Downloadable documents relating to availability

Reset Map – Reset map to show both network areas at high level.

Acronyms – Guidance on different terminologies to help understand our map

Search – allows you to search for an address, postcode, or for coordinates on our maps

List of assets – Clicking on the drop downs for Scotland and England present a list of all our sites. By clicking on each site will navigate on the map where the location is.

Map types – Switch between standard, satellite and colour blind maps

Glossary – For explanations on technical words and abbreviations, please visit slide 8

Filter – Filter the generation map to show constraint levels at GSP, BSP and substation levels. Substations are defaulted to off, to view these on the map click into the filter to toggle them on.

Acronyms – Guidance on different terminologies to help understand our map



GENERATION AVAILABILITY: SITE INFORMATION

Back to main website –
Clicking this button navigates back to the main SSEN website.

Key – Information on constraint levels at Grid, Bulk and substation supply points

Glossary – For explanations on technical words and abbreviations, please visit slide 8

Asset icon – Clicking on the icon will display a list of multiple assets if there are more than one along with information on constraint levels

EVs – Information on detailing EV local ChargePoint data in your area. Note, this button is clickable when zoomed into an area on the map

Site information –
Name of site, location and load data as well as the amount of contracted generation and any projects quotes

Asset information – A detailed breakdown of circuit information at that location such as voltage, constraint levels, contracted generation and more.

Substation information – View nearby substations and data on constraints, capacity and additional information

Other assets on site –
Any other assets on site will be found in a summary here, click on these to find out more.



UNDERSTANDING THE NETWORK CAPACITY MAP



NETWORK CAPACITY: MAP OVERVIEW

The screenshot shows the 'Network Capacity' interface. At the top left is a 'BACK TO SSEN' button. The main map area displays a map of Europe with circular callouts containing numbers (3, 22, 35, 3, 115) over various regions. A search bar is located at the top left of the map area. On the right side, there is a 'Key' section with icons for Grid Supply Points and Bulk Supply Points. Below that is a 'Network Capacity' summary bar with a 'CLOSE X' button, showing counts for Grid Supply Points (85), Bulk Supply Points (94), and Substations (-). A toggle switch is present between 'GENERATION AVAILABILITY' and 'NETWORK CAPACITY'. Below the toggle is a 'FILTER' dropdown and an 'A TO Z' sort button. A list of assets for Scotland and England is shown, with expandable sections for Grid Supply Points, Substations, Bulk Supply Points, and Substations. At the bottom right, there are icons for downloads, a glossary, and a reset map function.

Search – allows you to search for an address, postcode, or for coordinates on our maps

List of assets – Clicking on the drop downs for Scotland and England present a list of all our sites. By clicking on each site will navigate on the map where the location is.

Map types – Switch between standard, satellite and colour blind maps

Glossary – For explanations on technical words and abbreviations, please visit slide 8

Close summary bar

Toggle between our Generation Availability and Network Capacity maps

Key – Information on constraint levels at Grid, Bulk and substation supply points

Downloads – Downloadable documents relating to Network Capacity

Reset Map – Reset map to show both network areas at high level.

Filter – Filter the generation map to show constraint levels at GSP, BSP and substation levels. Substations are defaulted to off, to view these on the map click into the filter to toggle them on.

Acronyms – Guidance on different terminologies to help understand our map



NETWORK CAPACITY: SITE INFORMATION

The screenshot shows the 'Network Capacity' interface. At the top left is a 'BACK TO SSEN' button. A search bar is labeled 'Search Map'. A 'FILTER' dropdown menu is open, showing options for 'Grid Supply Points', 'Bulk Supply Points', and 'Associated BSPs'. The map displays several icons representing different sites and supply points. A detailed information panel for the 'MINETY' site is open on the right, showing location, load data, and transmission/distribution status. A 'VIEW BSPs ON MAP' button is also visible in the panel.

MINETY	
Location (Lat. Long)	51.6075,-2.0013
Minimum Load (MW)	191.70
Maximum Load (MW)	704.80
Transfer Nameplate Rating (MVA)	885.0

Grid Supply Point Information	
Transmission Status:	Constrained
Distribution Status:	Constrained
Voltage (kV):	400/132
Transmission Works:	New SGT for reverse power constraints
Transmission Reinforcement Completion Date:	470270
Distribution Works:	No spare 132kV bay for new 132kV CB connection.

Bulk Supply Points	
VIEW BSPs ON MAP	
CIRENCESTER	
Transmission Status:	Unconstrained
Distribution Status:	Unconstrained
Voltage (kV):	132/33
GALILEO	
Transmission Status:	Unconstrained
Distribution Status:	constrained by 800m long 132kV cable and Potential P2/7 non-compliance for Gallion - Stratton

Back to main website – Clicking this button navigates back to the main SSEN website.

Key – Information on Grid, Bulk and associated Bulk Supply points relating to our site

Glossary – For explanations on technical words and abbreviations, please visit slide 8

Asset icon – Clicking on the icon will display a list of multiple assets if there are more than one along with information on transmission and distribution statuses and voltage capacity as well as any corresponding sites.

Evs – Information on EV local ChargePoint data in your area. Note, this button is clickable when zoomed into an area on the map

Site information – Name of site, location and load data.

Asset information – A detailed breakdown of circuit information at that location such as voltage, constraint levels, ongoing works at transmission and distribution levels.

Connected BSPs – The map will display all corresponding connections to the transmission network. Note, this will change to substations if viewing a BSP site

Other assets on site – Connected sites will be shown here, clicking on them will navigate to this site on the map



USE CASE

This scenario is based on a local council and project group in Kidlington, Oxfordshire who are looking to understand the constraints on our network as they are planning to install EV charge points in the area.



ACCESSING SITE INFORMATION



Firstly when landing on the map our customers will enter their postcode in the search bar, in this case 'OX5 1PA'.

In this case our customer will need to use our **Network Capacity Map** to check the constraints in their area for their connection.

As we are looking to understand the constraints for EV connections, we want to enable the data for substations. This can be done by clicking on the 'FILTER' tab.

You will then see nearby substations appear on the map.

The screenshot shows the 'Network Capacity' web application. At the top, there is a 'BACK TO SSEN' button and the title 'Network Capacity'. The search bar contains 'OX5 1PA, Kidlington,...'. A 'FILTER' dropdown menu is open, showing 'Grid Supply Points', 'Bulk Supply Points', and 'Substations'. On the right, a summary table displays the following data:

Network Capacity		
Grid Supply Points	Bulk Supply Points	Substations
85	94	809

Below the table are tabs for 'GENERATION AVAILABILITY' and 'NETWORK CAPACITY', with a 'FILTER' button and a 'CLOSE X' button. A list of regions is shown with expandable sections for 'Scotland' and 'England', each containing 'Grid Supply Points', 'Bulk Supply Points', and 'Substations'. The map itself shows various locations like Salford, Heythrop, Enstone, Lower Heyford, Tackley, Kirtlington, Merton, Woodstock, Bladon, Kidlington, Islip, Noke, Beckley, Witney, Wytham, Brize Norton, Carterton, Botley, Oxford, Northway, Wood Farm, Cowley, Littlemore, and Tiddington. A 'mapbox' logo is visible in the bottom left corner.



UNDERSTANDING CONSTRAINTS

You now want to select the nearest substation to you, once you have clicked on the icon you will then be presented with the site information on the right pane.

Note: Always look at the constraint status when viewing a site. If constraint statuses are amber or red you will see under the 'voltage' section information on what works are underway and what the completion date is.

You can see here that there are no constraints on the network here so our customer is ready to make a new connections application for the EV charge points.

If the **Transmission** or **Distribution** works are constrained or partially constrained then reinforcement works will be needed to connect to the network here which will incur additional costs to complete the connection.

If this site or corresponding sites was constrained you can zoom back out on the map and find another nearby site to apply for a connection with.

The screenshot displays the 'Network Capacity' interface. At the top, there is a 'BACK TO SSEN' button and the 'Scottish & Southern Electricity Networks' logo with the tagline 'Powering our community'. A search bar contains 'OX5 1PA, Kidlington,...'. A 'FILTER' dropdown is set to 'Key', with options for 'Grid Supply Points', 'Bulk Supply Points', and 'Substations'. A 'Key' legend shows icons for 'Associated Substations' and 'Substations'. The map shows a substation icon at Woodstock. The right-hand panel displays the following information:

- WOODSTOCK**
- Location (Lat, Long): 51.8540, -1.3510
- Minimum Load (MW): 2.34
- Maximum Load (MW): 8.94
- Transfer Nameplate Rating (MVA): 15.0
- Substation Information**
- Transmission Status: Unconstrained (green circle)
- Distribution Status: Unconstrained (green circle)
- Voltage (kV): 33/11
- Transmission Reinforcement Completion Date: undefined
- Corresponding BSP: WITNEY & YARNTON

At the bottom left, there is a 'mapbox' logo and a 'mapbox' text label. At the bottom right, there is a 'OpenStreetMap Improve this map' text label.



GLOSSARY

Bulk Supply Point (BSP): BSPs typically consist of two 132/ 33kV transformers feeding several primary substations.

Connection Date: Date the project is due to connect to the network.

Connection Manager: Local Customer Connection Manager who is available to answer any questions about getting connected.

Contracted Capacity (MVA): The amount of capacity the project is contractually allowed to distribute onto the network.

Constrained: The network does not have the capacity to transport electricity required or produced from a new connection.

EV: Electric vehicles.

Fault Level (kA): This is the measure of the level of energy supplied to a fault on the network. Network plant is rated to withstand a given amount of Fault Level. Distributed Generation contributes energy during fault conditions in addition to the existing Fault Level and hence it increases it.

Grid Supply Point (GSP): These substations act as the interface between our 132kV network and the transmission network operated at 400kV or 275kV.

Green/ Amber/ Red Status: Green status shows areas that are unconstrained, Amber status shows areas that are partially constrained, Red status shows areas that are constrained.

Location (Lat, long): Co-ordinates of the location of the GSP.

Maximum Load (MW): The Maximum Load value is the maximum demand on the primary substation after deducting the existing distributed generation.

Minimum Load (MW): The Minimum Load value is the minimum demand left on the primary substation after deducting the existing distributed generation. A negative minimum value indicates the existing amount of reverse power flow already flowing through the primary transformers.

Open Data: Data in machine readable format that can be freely used, shared, and built on by anyone, anywhere, for any purpose.

Partially Constrained: The electricity network has partial capacity to transport electricity required or produced from a new connection.

Quoted Generators: All projects currently quoted but not yet accepted.

Reverse Powerflow Capacity: When generation exceeds the local demand on a primary substation, the excess power carries through the primary transformers to the upstream HV/EHV network for use elsewhere on the network. However, depending on the condition of the assets and tap changer capability; the actual level of reverse power flow may be restricted to as low as 0% of the transformer ratings. If the reverse power flow capability of a primary substation is 0% then the maximum distributed generation which can be connected to the primary substation is only the local demand served by the primary; as the additional power cannot be transferred to the upstream HV/EHV network.



GLOSSARY

State: Describes if the project is connected to the network or if the project is contractually due to connect but has not yet been completed.

Substation: Substations typically consist of two 33/ 11kV or 33/ 6.6kV transformers feeding a HV network. It should be noted that the value of spare capacity quoted for a substation considers the constraints at BSP.

SOW: Statement of Works

SWAN: South West Active Network Management

Technology Type: Name of the connected/ contracted project.

Transformer Nameplate Rating (MVA): The Transformer Nameplate Rating is found on the primary substation and provides three pieces of important information. Firstly, kVA rating displays the capacity of the transformer. Primary and secondary voltages provide the output voltage with a given input voltage. Lastly, the winding orientation describes how the windings are inter-connected.

Transmission Reinforcement Completion: Date that Transmission Reinforcement works are due to be completed.

Transmission Works: Details of Transmission construction works that the energization of the project depends on for connection.

Unconstrained: There are no limits or restrictions on the electricity network to support a new connection.

Voltage (kV): LV (Low Voltage, 2300 – 400 volts), HV (High Voltage, 11,000 volts), EHV (Extra High Voltage, 33,000 volts, SHEPD territory).



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