

## WPD Carbon Portal API Service - Quick Start User Guide

### Introduction

The WPD Carbon Portal API services provide direct read-only access to the Carbon Tracer database tables which are used to drive the WPD Carbon Tracer application. The Carbon Tracer app can be downloaded for mobile devices from the [Apple Store](#) and [Google Play](#). The Web version of the app is available at <https://carbontracer.westernpower.co.uk>.

The Calling reference for the Carbon Portal API services is available via the APIARY web service at [wpdcarbonapi.docs.apiary.io](http://wpdcarbonapi.docs.apiary.io).

The API services of the WPD Carbon Portal allow interested third parties to replicate and extend the functions of the existing WPD app within a user controlled environment or application. WPD's terms of use for the Portal defines the legitimate use of the services.

The Carbon Tracer app and Carbon Portal API services provide instantaneous, historical and forecast Carbon Intensity and energy mix detail at a local level along with certain additional information which aids its interpretation. Additionally, summary carbon intensity information relating to the whole of the WPD distribution area is available.

For these purposes, the *local level* is the distribution subsystem called the Bulk Supply Point (BSP, referred to simply as 'substations' within the application), usually a large substation at the 132/33kV voltage level which itself supplies a set of primary substations at the 33/11kV voltage level. All data held and managed by the Carbon Tracer and Portal relates to the set of BSPs which operate across the totality of the WPD network. There are some 270 BSPs in total.

The Carbon Portal data is based on the Carbon Tracer database which is principally WPD sourced data "animated" by a weather feed from Darkskies, and National Transmission network infeed taken from the BMRS (long term) and National Grid (short term, 2 day) data.

### Choosing a location / BSP

For the bulk of the API services targeting local level information for a particular place, the caller needs to determine which BSP supplies that location. In order to achieve this, the caller should provide postcode or other coordinates for the required location and query the API to obtain the Network Reference ID of the applicable BSP. This can be done using either the `/get_bsp_by_postcode/` or `/get_bsp_by_latlng/` calls. The Network Reference ID (NRID) may then be used in subsequent calls to request the API service to return the various sets of local detail which the WPD Carbon Portal makes available. The BSP is not a required input argument for WPD scope calls such as those described in the 'WPD area energy supply' section below.

### Getting static information for a BSP

A set of Electricity Supply Area (ESA) polygons are provided for the BSPs and the geographic coordinates for these may also be accessed via the Carbon Portal, using the `/get_bsp_esa/` call. These supply areas are indexed using the associated BSP network reference ID.

Using the BSP NRID, further information can be found about each BSP to display its capabilities and supply details. The calls to return BSP using postcode and lat/long will return some high level information such as the name of the BSP and what type of BSP it is (e.g. rural). To see a list of the generation types that supply a BSP and the capacity for each, use `/get_capacity_list/` with the NRID. To identify locally generated energy separately from the energy generated by the national grid and fed back into the BSP, use `/get_local_generation_list/`. Finally, the `/get_current_load/` call can also be used to retrieve the maximum load of a BSP, meaning the maximum amount of power it can supply.

### Getting live / historical / forecast data for a BSP

The carbon intensity at a BSP is available live (`/get_carbon_intensity_now/`), forecast (`/get_carbon_intensity_forecast/`) and historically (`/get_carbon_intensity_history/`), allowing access to a 14 day window of data for each BSP (7 days history, today, 6 days forecast).

Access to the data that has produced the BSP carbon intensity can also be obtained using the API for a more detailed breakdown, such as what is shown in the carbon tracer application.

The current load on the BSP can be retrieved using `/get_current_load/`, although this is available only as live data. For a breakdown of local energy, split by generation type, `/get_local_generation_list/` can be used, although again this is only available for live data.

Energy mix and demand can be accessed in live, forecast or historical form (`/get_energy_mix_now/`, `/get_energy_mix_forecast/`, `/get_energy_mix_history/`) and (`/get_demand_now/`, `/get_demand_forecast/`, `/get_demand_history/`). The energy mix will return all the generation types that are supplying the BSP, and the amount of power that each is providing. The demand will return the amount of power that is currently required within the local area of the BSP.

Finally, 'marginal' carbon intensity can also be accessed for live and forecast data, showing the difference between the carbon intensity at a BSP and at the national grid level. This is the only forecast data that can be called for either a 7 or 2 day window (`/get_marginal_carbon_intensity_forecast_7/`, `/get_marginal_carbon_intensity_forecast_2/`). It is also available live using `/get_marginal_carbon_intensity_now/`.

### Getting information about the WPD area energy supply

The Carbon Portal is supplied by Western Power Distribution, meaning that we use the data that we have on all BSPs in our area to power the API. There are some calls which return aggregated data on the WPD area rather than data that is specific to a BSP. `get_carbon_table` can be used to list all BSPs in the WPD area, ordered by their carbon intensity, and `/get_wpd_carbon_intensity_all_regions` returns the carbon intensity across the entire area. To see whether the WPD area is taking energy from the national grid or delivering some back to be used in other areas, `/get_wpd_ng_powerflow` will show you the power flow between the two.

## **API Restrictions**

The API is not password restricted and does not require an account. However, there are rate limitations to avoid overuse of the API. We hope that users will not be hindered by these, as many of the calls return large bundles of data, but if you are finding that the limits are hindering your usage, please contact us.