e-Bench® API integration

e-Bench® provides a full featured user portal for access to all the data we hold for your organisation, but if desired that information can also be accessed via API. We take client data security very seriously, and as such provide two access methods. The public data API is targeted toward those wishing to graph their data on a public forum, and as one might expect relaxes all security around that particular data. Whereas the full data API provides complete flexibility on how the data is extracted and used but requires authentication and its flexibility makes it somewhat more complex to use.

Public data API

A client may choose to make their some or all of their data public. If this approach is chosen you will be asked to sign a data release agreement on behalf of your organisation. Once this is signed the data that you have released will be made available to the internet. We recommend this approach is only used for data that you are already planning on making public yourself.

Once a data release agreement has been signed, we will provide you with a data **collection** name and a number of data **series** names for the data you have chosen to release. Data can be accessed at

```
https://www.e-bench.com/eBench/data/public-data/<collection>/<series>/<resolution>/<year>-<year>
```

Where **resolution** is either monthly or yearly. For example if you collection name is *my-data* and your series are *electricity* and *water*, you could make calls like:

```
https://www.e-bench.com/eBench/data/public-data/my-data/electricity/monthly/2023-2024

https://www.e-bench.com/eBench/data/public-data/my-data/water/yearly/2020-2024
```

And so on. Data will be returned in a "graph-ready" as described here:

```
{
        "quantityLabel":"kWh",
        "title":"Main Office Electricity",
        "seriesNames":["Electricity 2023", "Electricity 2024"],
        "seriesKeys":["data2023", "data2024"],
        "data":[
                {"name":"Jan", "data2023":123.4, "data2024":432.1},
                {"name":"Feb", "data2023":234.5, "data2024":543.2},
                {"name":"Mar", "data2023":345.6, "data2024":654.3},
                ...
        ]
}
```

Unfortunately for security reasons, the public data API is not self-service so any requests for the provision of additional data must be actioned by CarbonEES. There is no charge for this service and once a data release agreement is signed our turnaround time for these requests is quite short.

CarbonEES is open to extending this API and alternative data formats can easily be facilitated if requested by a client with a data release agreement in effect.

Full data API

The full data API provides access to all your data in e-Bench. The full data API uses the same authentication system as the e-Bench® app, so to make the data available you simply need to create a user in the e-Bench® app. We strongly recommend avoiding the use of a "real person" user for API access. Instead create a dedicated API access user. You will however need to give it a real email address for the purposes of account verification and password setting. To give the API user access to just some of the organisation's data, you can configure their security settings through the e-Bench® app in the same way as any other user. You **must not** store the user credentials in a public place nor use them in a way that they are transmitted unencrypted. ie the authentication call must be server-side unless you are requiring the user to enter the password for each access.

The API is extensive and we do not document the entire API here, only the most common use case – data extraction.

Authentication

You must hold a valid token to access the e-Bench API. To get a token

```
POST https://www.e-bench.com/api/public/login/<org name>
```

with the body

```
{"username":"<username>","password":"<password>"}
```

required headers:

```
Content-Type: application/json
```

Where <org name> must match our version of the organisation name; can be checked through the eBench UI if in doubt. This will return a response which you can ignore (unless you wish to test for success) but you should harvest the **X-Ebench-Token** header.

All subsequent calls must include the header

```
Authorization: Bearer <token>
```

A refreshed token is returned with each response but in many cases, token life will be long enough for you to complete your data retrieval on the original token. If not, simply refresh your token from the **X-Ebench-Token** header of the data responses.

Data identification

The API provides data at the same levels as the e-Bench® app: organisation, site, data-source or reporting group. To access the data you need to know the **ID** and **level** of the data you wish to access. At the API level you must distinguish between data source reporting groups and site reporting groups even though the API handles these seamlessly as one.

Organisation identification

Our API calls are organisation linked, so you will need to know the ID of your organisation. Our organisation IDs are not published so you must extract this first. The easiest way to do this is to contact CarbonEES, however if you wish to query the API to retrieve it

```
GET https://www.e-bench.com/api/current-user/org-summary
```

This call returns information about the currently authenticated user and the organisation that they are authenticated against. You only need access the **id** parameter from the response.

Other levels' identification

The easiest way to do this is through the e-Bench® app. These can be copied from the page address as you navigate around the app. Please be aware that for legacy reasons, data-sources are referred to as meters at an API level. Here are some examples of page addresses which the ID can be harvested from:

```
https://www.e-bench.com/v23/sites/19997
https://www.e-bench.com/v23/data-sources/52028
https://www.e-bench.com/v23/meter-groups/12147
https://www.e-bench.com/v23/site-groups/29473
```

where the levels and IDs are *site 19997*, *meter 52028, meter-group 12147* and *site-group 29743* respectively. As noted above, at an API level you must know if a reporting group is data source (referred to as meter in the API) level or site level. Please note that if you are intending to create a dynamic application based on our API, you can also extract data source, site or reporting group lists from the API. Please contact CarbonEES for more information on this.

Accessing data

There are two primary data extraction mechanisms. The first is optimised for many assets covering the same time period. eg extracting data for all data sources for January 2024. This method is only available at the data source and site level. The second is optimised for a single asset but offers more flexibility in the data that can be extracted.

Many assets, few time periods

Data can be extracted by making the following call

```
POST https://www.e-bench.com/api/organisations/<org-id>/<level>-data-export
```

request body:

```
{
        "assets":[
                <id1>,
                <id2>,
                ...
        ],
        "data":[
                {
                        "label":"Total Energy - kWh",
                        "unit":"kWh",
                        "source":"standard",
                        "type":"cons"
                }
        ],
        "ranges":[
```

```
                {
                        "aggregation":"monthly",
                        "start":"2021-01-01",
                        "end":"2021-06-30"
                }, ...
        ],
        "validationColumns": false
}
```

required headers

```
Content-Type: application/json
```

which will return the data in CSV format.
Notes:

- The organisation ID must match the organisation you are logged into
- **level** is either *meter* or *site*.
- The IDs at the given level must belong to the organisation you are logged into.
- **label** is not used but will be returned with the data as a header(s)
- **unit** is not used but will be returned with the data as a header(s)
- **source** defines how the data will be sourced. *standard* provides default data for the assets chosen. The other option is *energyUnit* which allows you to extract the data in an energy unit different from the default provided by the data source. (eg GJ instead of kWh for a gas meter). To use this substitute *energyUnit* for standard and add an id parameter to the data section. The id must match a valid unit id within e-Bench® and that unit must match the data type of the asset(s) requested. eg if you request GJ (gas) for an electricity meter, you will not receive any data. CarbonEES can provide appropriate unit IDs on request.
- **type** can be *cons* (consumption), *cost*, *co2e* (ghg emissions)
- **validationColumns** indicates if the response should also include data completeness information (number of days in the month available).

One asset, more flexibility

Data can be extracted by making the following call

```
POST https://www.e-bench.com/api/organisations/<org-id>/graph-data
```

request body:

```
{
        "asset":{
                "type":"organisation",
                "id":"<id>"
        },
        "quantity":{
                "source":"standard",
                "type":"cons"
        },
        "presentation":"normal-timeseries",
        "years":[
                <year>,
                <year>,
                ...
        ],
        "endMonth":12
}
```

required headers

```
Content-Type: application/json
```

which will return the data in JSON format.
Notes:

- The organisation ID must match the organisation you are logged into
- **type** is either *meter, site, organisation, meter-group* or *site-group*.
- **source** defines how the data will be sourced. *standard* provides default data for the assets chosen. There are several other options available,
    - *energyUnit* as described above,
    - *target*, *targetBaseline* and *targetDeviation* which return data from the reduction target (if configured) instead of the asset itself
    - *splitco2_scope1 (2, 3), splitco2_category1 (2,3,4,5,6)* which report just a single scope or category of GHG emissions
    - *energyReportingGroup* will report all usage within an activity grouping (eg L of fuel regardless of what fuel, or pkm flights regardless of domestic, international etc). Similarly to energyUnit this also requires an id which CarbonEES can provide.
- **presentation** indicates what pre-processing is performed on the data. The options are
    - *normal-overlay* and *normal-timeseries* are equivalent and will just return the data as is.
    - *cumulative-timeseries* will return the data as a cumulative series from the start of the requested time period
    - *cumulative-overlay* will return the data as a cumulative series from the start of each year, resetting to zero and restarting accumulation at every year-end
- **type** can be *cons* (consumption), *cost*, *co2e* (ghg emissions)
- **years** is a list of years' data to return
- **endMonth** is the end month of the year (eg 12 to return a calendar month or 3 to return an FY ending March)

The data returned will be of the format

```
{
        "data": [
                [ <year-1-month-1-datum>, <year-1-month-2-datum>, ...],
                [ <year-1-month-1-datum>, <year-1-month-2-datum>, ...],
                ...
        ],
        "years": [ <year-1>, <year-2>, <year-3>],
        "endMonth": <end-month>
}
```

Where eg if *endMonth* is 12 then **month-1** will be January, **month-2** February etc, but if *endMonth* is 3 then **month-1** will be April, **month-2** May etc.