Easy-PV API v0.1

PV System Quote Tool

Endpoints

For dummy values: **https://soapi.easy-pv.co.uk/sandbox/design**

Authentication

This API uses API keys to authenticate requests. Provide your API key within the 'x-api-key' header of your request. Without this your request will fail.

Inputs

You must send **POST** requests with an input object passed as JSON within the body of the request. The input object must contain the following parameters.

- *postcode*: Postcode of the building.
- *latitude*: Latitude of the building. Expected to be a number between 49 and 61.
- *longitude*: Longitude of the building. Expected to be a number between -11 and 2.
- *roofs*: An array containing object(s), each representing a roof. Each must have the following required properties:
  - *vertices*: An array of coordinates of the roofs vertices. The first two arrays define the roofs gutter.
  - *obstructions*: An array of obstructions, if present. Each obstruction is expected in the format ['type',width,height,x1,y1].
  - *pitch*: Angle of the roof, in degrees from horizontal. Expected to be a number between 0 (flat) and 90.
  - *roofType*: Type of roof. Expected to be one of the following values: "slate", "compositeSlate", "concreteTile", "plainTile", "panTile", "sheetMetal" or "flat".
  - *shading*: Percentage shading on the pv array as a decimal between 0 and 1.
  - *maxPanels*: Maximum amount of solar panels that should be allocated to the roof. Expected to be an integer.
- *annualConsumption*: The building's annual electricity consumption in kWh.
- *electricityImportTariff*: Electricity import tariff.
- *electricityExportTariff*: Electricity export tariff.

Outputs

The API will respond with a json encoded object with the following properties.

- *status*: The status of the request, which will equal 'success' or 'error'.
- *apiVersion*: A string representing the API version.
- *easyPVProject*: All the data required for Easy-PV to regenerate the quotes project, encoded into a string.
- *quotes*: An array of quotes, each containing the following properties:
  - *battery*: A boolean which indicates the inclusion of a battery in the PV system.
  - *annualGeneration*: Annual PV generation in kWh.
  - *systemCost*: Total cost of the system in £.

  - *breakEvenYears*: Years until the break even date.
  - *selfConsumption*: Self consumption estimates in MCS format. Only present when battery=true.
- *roofs*: An array of roofs, each containing the following properties:
  - *numberPanels*: The number of panels on the roof.
  - *panelModel*: A string containing the panel model.
  - *panelLayoutImage*: A bas64 encoded image of the PV system on the roof, stored as a string.

Example

JSON encoded parameters:

```
let input = {
    postcode: 'CB24 6AZ',
    latitude: 51.12345234,
    longitude: -0.022334,
    roofs: [
              {
                 vertices:[[-5000,-2500],[-5000,2500],[5000,2500],[5000,-2500]],
                 obstructions:[["velux",935,1342,1484,-1471]],
                 pitch: 25,
                 roofType: "slate",
                 shading: 0.20,
                 maxPanels: 15,
              },
              {
                 vertices:[[-5000,-2500],[-5000,2500],[5000,2500]],
                 obstructions:[["chimney",935,1342,1484,-1471]],
                 pitch: 35,
                 roofType: "slate",
                 shading: 0,
                 maxPanels: 10,
              }
           ],
    annualConsumption: 3100,
    electricityImportTariff: 0.146,
    electricityExportTariff: 0.051
};
```

Usage with jQuery:

```
let settings = {
  "url": "https://soapi.easy-pv.co.uk/sandbox/design",
  "method": "POST",
  "headers": {
    "Content-Type": "application/json",
    "X-API-KEY": "xxxxxxxxxxxxxxxx",
  },
  "data": JSON.stringify(input),
};

$.ajax(settings).done(response => console.log(response));
```

Dummy Values

The /sandbox/design endpoint will always return a response in the following format when a valid input is provided.

Response:

```
{
  status: 'success',
  apiVersion: '0.1',
  easyPVProject: 'encoded string',
  quotes: [
    {
      battery: false,
      annualGeneration: 5199,
      systemCost: 1876.15,
      breakEvenYears: 6,
    },
    {
      battery: true,
      annualGeneration: 5199,
      systemCost: 2659.24,
      breakEvenYears: 11,
      selfConsumption: 0.60,
    }
  ],
  roofs: [
    {
      numberPanels: 10,
      panelModel: 'Longi 315W all black split cell mono',
      panelLayoutImage: image1 // Where image1 and image2 are base64 encoded image strings
    },
    {
      numberPanels: 5
      panelModel: 'Longi 315W all black split cell mono',
      panelLayoutImage: image2
    }
  ]
}
```

Errors

This API uses conventional HTTP response codes to indicate the success or failure of a request. Where possible, the API will return further error details in the body of the reponse. An example of this is found below.

```
{
  "status": "error",
  "statusCode": 400,
  "details": "Invalid UK Postcode."
}
```

More Example Inputs

These can be used in the same way as the first example input to prompt a response with different dummy values.

Input with lower maxPanels for one roof out of two

```
{
    postcode: 'CB24 6AZ',
    latitude: 51.12345234,
    longitude: -0.022334,
    roofs: [
              {
                 vertices:[[-5000,-2500],[-5000,2500],[5000,2500],[5000,-2500]],
                 obstructions:[["velux",935,1342,1484,-1471]],
                 pitch: 25,
                 roofType: "slate",
                 shading: 0.2,
                 maxPanels: 8,
              },
              {
                 vertices:[[-5000,-2500],[-5000,2500],[5000,2500]],
                 obstructions:[["chimney",935,1342,1484,-1471]],
                 pitch: 35,
                 roofType: "slate",
                 shading: 0,
                 maxPanels: 10,
              }
           ],
    annualConsumption: 3100,
    electricityImportTariff: 0.146,
    electricityExportTariff: 0.051
};
```

Input with lower maxPanels for both roofs

```
{
    postcode: 'CB24 6AZ',
    latitude: 51.12345234,
    longitude: -0.022334,
    roofs: [
              {
                 vertices:[[-5000,-2500],[-5000,2500],[5000,2500],[5000,-2500]],
                 obstructions:[["velux",935,1342,1484,-1471]],
                 pitch: 25,
                 roofType: "slate",
                 shading: 0.2,
                 maxPanels: 8,
              },
              {
                 vertices:[[-5000,-2500],[-5000,2500],[5000,2500]],
                 obstructions:[["chimney",935,1342,1484,-1471]],
                 pitch: 35,
                 roofType: "slate",
                 shading: 0,
                 maxPanels: 4,
              }
           ],
    annualConsumption: 3100,
    electricityImportTariff: 0.146,
    electricityExportTariff: 0.051
};
```

Input with no obstructions

```
{
    postcode: 'CB24 6AZ',
    latitude: 51.12345234,
    longitude: -0.022334,
    roofs: [
              {
                 vertices:[[-5000,-2500],[-5000,2500],[5000,2500],[5000,-2500]],
                 obstructions:[],
                 pitch: 25,
                 roofType: "slate",
                 shading: 0.2,
                 maxPanels: 15,
              },
              {
                 vertices:[[-5000,-2500],[-5000,2500],[5000,2500]],
                 obstructions:[],
                 pitch: 35,
                 roofType: "slate",
                 shading: 0,
                 maxPanels: 10,
              }
           ],
    annualConsumption: 3100,
    electricityImportTariff: 0.146,
    electricityExportTariff: 0.051
};
```

Input with one roof

```
    {
        postcode: 'CB24 6AZ',
        latitude: 51.12345234,
        longitude: -0.022334,
        roofs: [
                  {
                     vertices:[[-5000,-2500],[-5000,2500],[5000,2500],[5000,-2500]],
                     obstructions:[],
                     pitch: 25,
                     roofType: "slate",
                     shading: 0.2,
                     maxPanels: 15,
                  }
               ],
        annualConsumption: 3100,
        electricityImportTariff: 0.146,
        electricityExportTariff: 0.051
    };
```

Version History

This documentation is relevant for API version 0.1.

- **Version 0.1**: Released 18/09/2020. Documentation updated 24/09/2020 to include missing key-value pairs in the 'Inputs' section.