



First Solar PlantPredict

Developer Guide: PlantPredict API

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1 API Overview

1.1 RESTful

The development team places a high priority on RESTful web API patterns and practices. Deviations from the purest REST concepts have been made where it has been deemed pragmatic to do so.

HTTP verbs are used as appropriate. PlantPredict's API does not support so-called "HTTP verb tunneling".

1.2 State

The PlantPredict API has persistent storage for certain objects, such as Projects, Predictions, Modules, Inverters, Weather, etc. However, no concept of session state exists. Each request must supply the complete set of inputs necessary to complete the operation. Sometimes that may be just the unique identifier, but it may also be the entire object or object graph.

For example, when you perform a POST operation for a Project you are expected to provide a complete Project object. The data is persisted and a unique identifier is returned. You may retrieve the same Project data at any time using a subsequent GET operation by passing in the unique identifier you obtained in response to your POST operation.

List operations are available for all necessary objects – the output from these lists includes the unique identifier for each object which can then be attached to a subsequent GET request. The system does not "remember" which Project you were working with last when performing operations – you must always supply the unique identifier.



1.3 Data Transfer Formats

The PlantPredict API transfers data primarily in JSON using the following request/response header:

```
Content-Type: application/json; charset=utf-8
```

When applicable, clients are expected to provide request body data to the API in JSON.

Clients may choose to provide the `Accept` request header (shown below) but the default response will be in JSON even if this header is omitted:

```
Accept: application/json
```

It is possible to request `text/xml` but clients are discouraged from doing so as not all endpoints will work properly. XML support will be completely disabled in a forthcoming release of the API without prior notice.

In certain cases data is provided in other formats such as Excel, CSV, etc.

2 Authentication

2.1 Overview

The PlantPredict Authorization server, hosted by Okta, offers the OAuth2 Password grant flow for direct API access. API Credentials are defined as a Client Username, Client Password, Client ID and Client Secret, which are generated by the system at the request of a Company Administrator. These credentials must be linked to an existing User Profile.

2.2 How to Generate API Credentials

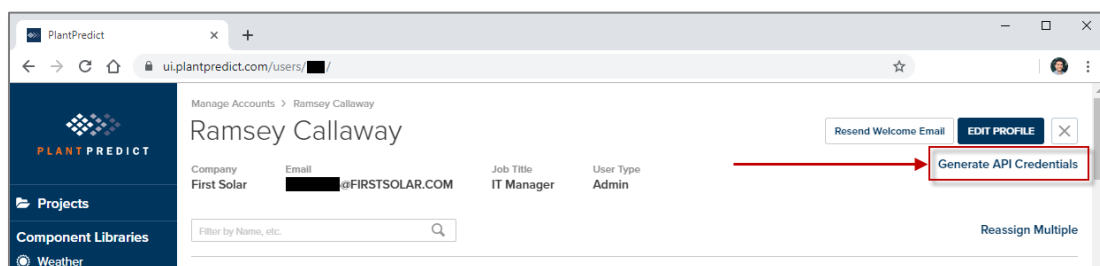
An Administrator must perform a 1-time process per user to generate API Credentials.

Follow these steps:

1. Open the PlantPredict User Interface and click on the Manage Accounts (gear icon) at the bottom left



2. Locate the desired User and click on their name
3. Click “Generate API Credentials” on the user’s profile page



4. Securely record the Client Username, Client Password, Client ID and Client Secret
5. Communicate all four of these pieces of data to the user

Important: The Client Password, Client ID and Client Secret are displayed only once after clicking the Generate API Credentials link. **You must copy and store the Client Password, Client ID and Client Secret in a secure manner.**

If you lose track of your Client Password, Client ID and Client Secret you may click Generate API Credentials again (as many times as you wish) and a new Client Password, Client ID and Client Secret will be created, immediately invalidating the previous Client Password, Client ID and Client Secret.

All actions performed using these API Credentials are treated as if the user themselves were performing the action.

2.3 Acquiring a Token

The PlantPredict API accepts tokens issued by the Okta authorization server. An access token is required to access protected resources, such as your Company's Projects, Predictions and other assets.

The client must make a request to obtain a token from a special authorization server endpoint:

<https://afse.okta.com/oauth2/aus3jzhulkrINTdnc356/v1/token>

The Client Username, Client Password, Client ID and Client Secret must be passed to this endpoint and, if successful, an access token is issued in the response. The specific requirements of this call are documented in the accompanying starter kit example – see the file called “Token_POST_Request.txt”.

2.4 Accessing Protected Resources

Send the access token with every protected API operation as an HTTP request header:

```
Authorization: Bearer <token_here>
```

2.5 Token Refresh

The PlantPredict API supports the refresh_token grant. In addition to the access token, a refresh token is returned from the call documented in section 2.3.

The specific requirements of this call are documented in the accompanying starter kit example – see the file called “Refresh-Token_POST_Request.txt”.



3 API Documentation

3.1 OpenAPI

The PlantPredict API is described by an online API description file at the following URL:

<https://api.plantpredict.com/swagger/docs/current>

This document is generated with every build and reflects the most recent API definition.

A generated UI is also available for human-readability, if that's what you're into:

<https://api.plantpredict.com/swagger/ui/index>