



Flexible Power Participant API guide

February 2018

Introduction

For the trial a simple API has been developed. Participants are expected to build a complementary interface to accommodate this information. Alternatively, a hardware interface is available.

The API has both Incoming and Outgoing signals, covering start, stop, metering and emergency stop, for each service in each zone. This is defined in full at <https://flexiblepowerwpd.co.uk/> including the required security and authentication.

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API Overview

There are 2 main signal types within the API, those going to the participant and those from the participant.



To the Participant

The signals to the participant cover the dispatch of assets. There is one message to start the dispatch and one to stop per programme and per zone.

Flexible Power Participant Incoming API documentation version 1

/dispatch

The API sending to a Participant. Includes immediate dispatch control.

/dispatch	
Dispatch control.	
/dispatch/start	PUT 
/dispatch/stop	PUT 

PUT  /dispatch/start

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 Secured by certificate

Incoming requests will contain a certificate. The common name MUST be verified as flexiblepowerwpd.co.uk to confirm the sender's identity. Any other common name should reject the request.

Request **Response** Security

Body

Media type: application/json**Type:** object**Properties**


- **programme:** *required (one of dynamic, secure, restore)*
- **zone_id:** *required (string)*

Example:

```
{
  "programme": "dynamic",
  "zone_id": "banbury"
}
```

PUT  /dispatch/stop

✕

 Secured by certificate

Incoming requests will contain a certificate. The common name MUST be verified as flexiblepowerwpd.co.uk to confirm the sender's identity. Any other common name should reject the request.

Request **Response** Security

Body

Media type: application/json**Type:** object**Properties**

- **programme:** *required (one of dynamic, secure, restore)*
- **zone_id:** *required (string)*

Example:

```
{
  "programme": "secure",
  "zone_id": "brackley"
}
```

From the Participant

There are 2 signals coming from the participants to Flexible Power.

The first is the metering signal, providing minute by minute data in kW for each programme and each zone. This allows Flexible Power to monitor and ultimately bill the customer.

The second signal is an emergency stop to inform Flexible Power of last minute circumstances that limit the delivery of services. This is again by programme and by zone.

Flexible Power Participant Outgoing API documentation version 1

[/reading](#)

[/stop](#)

`https://{environment}.flexiblepowerwpd.co.uk/{version}/participant/`

The API sending from a Participant. Includes sending readings data and informing of immediate stop.

- **environment:** *required (string)*
The name of the host for the relevant environment; uat for testing and removed for production

Examples:

test:

```
https://uat.flexiblepowerwpd.co.uk/v1/participant/reading
```

prod:


```
https://flexiblepowerwpd.co.uk/v1/participant/stop
```

- **version:** *required (1)*

<code>/reading</code>	
Reading (kW) for a given zone in a given programme	
<code>/reading</code>	PUT 
<code>/stop</code>	
Emergency stop of all delivery in the programme and zone	
<code>/stop</code>	PUT 

PUT  /reading

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 Secured by token

WPD will issue Participants with an authorization token that should be included in the headers of all outgoing requests.

Request **Response** Security

Headers

- **Authorization:** *required (string)*
Example:

```
Bearer participant_api_test_token
```

Body

Media type: application/json

Type: object


Properties

- **timestamp:** *required (datetime)*
UTC
- **programme:** *required (one of dynamic, secure, restore)*
- **zone_id:** *required (string)*
- **power:** *required (integer)*
kW

Example:

```
{  
  "timestamp": "2018-02-28T16:41:41",  
  "programme": "restore",  
  "zone_id": "brackley",  
  "power": 10000  
}
```

PUT  /stop x

 Secured by token
WPD will issue Participants with an authorization token that should be included in the headers of all outgoing requests.

Request **Response** Security

Headers

- Authorization: *required (string)*
Example:

```
Bearer participant_api_test_token
```

Body

Media type: application/json

Type: object

Properties

- programme: *required (one of dynamic, secure, restore)*
- zone_id: *required (string)*

Example:

```
{
  "programme": "restore",
  "zone_id": "brackley"
}
```

If you have any questions please do not hesitate to get in contact with the Flexible Power team on WPDflexiblepower@westernpower.co.uk

Syntax

It should be noted that the following syntax is required:

Term	Acceptable Options
"zone_id"	"banbury" "bletchley" "brackley" "bradwell-abbey" "coventry-interconnector" "daventry" "harbury" "rugby" "stoney-stratford" "warwick-11kv" "warwick-33kv" "whitley"

"programme"	"secure" "dynamic" "restore"
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API testing.

To streamline the participant API build, a test environment has been created to enable participants to send and receive dummy data, allowing them to test and debug their interfaces. Once customers have developed a base interface, access to this environment can be arranged by Flexible Power.

Once the participant has developed a working tool and signed the participant contract, a commissioning test should be arranged with Flexible Power. This should simply be a validation exercise and should only be arranged once interfaces have been well tested in the test environment.

The Flexible Power test will consist of several simple tests to ensure the inputs and outputs of the interface are identical for both parties. This will be done with dummy data and is not expected to involve the connection of real assets. Integration beyond the interface remains the sole responsibility of the participant.

During the test the customer will be expected to:

- Send metering data (this can be dummy data) reliably for 30 minutes (the full duration of the test).
- Receive a start signal for one of the relevant services in one of the zones
- Send an emergency stop signal for the service.
- Receive a start signal for the other relevant service in another zone
- Receive a stop signal

Following the test, the participant must supply a log of all signals sent and received (including metering signals) to allow Flexible Power to verify both ends have seen the same information.

If the test is successful, the participant's API will be transferred to the live environment. If not, the participant will be asked to rebuild the interface and test again in the test environment.

Overview of self-test:

This self-test environment should be used to test that the participant's platform is linked to Flexible Power's API and the data is communicated in the correct format and successfully. It can be used to create a token and send dispatch requests and receive metering data through the Flexible Power API.

The environment is available at

<https://uat.flexiblepowerwpd.co.uk/index#setup>

There are 4 main sections:

- Token: The first tab is used to create a token for connecting to the API,
- Dispatch: In the second tab, the participant should add their endpoint URL to receive a dispatch requests. Dispatches can then be sent to the set endpoint for the specified zones and programmes via the API.
- Last 10 readings: This tab should be used to verify the readings sent to Flexible Power via the API. This can be used to check if the readings have been received and are in correct format, the last 10 readings will be shown in this page
- Last 10 received stop signal: This tab should be used to verify the emergency stop signals sent to Flexible Power via the API. This can be used to check if the signals have been received and are in correct format, the last 10 signals will be shown in this page

FAQ

Q: How should participants contact us with problems?

Please contact WPD Flexible Power with any questions or issues: wpdflexiblepower@westernpower.co.uk

Q: What is the API type ? REST, SOAP ?

We use a REST-like HTTP protocol. Please see the To Participant and From Participant sections at <https://flexiblepowerwpd.co.uk/>

Q: How is a minute defined in the API?

For the reading 2018-02-28T16:41:00Z, the power reading should be the average power consumption of the participant's sites in that zone from 16:40:00 (inclusive) to 16:41:00 (exclusive) in UTC (Coordinated Universal Time).

Q: How can I correct data?

Although missing readings can be resubmitted through the API at any time, backfilled or corrected data will not be recognised for billing purposes unless a re-submission request is raised. Please contact WPD Flexible Power.

Q: Could you provide more information on the encryption and authentication methods?

Users will authenticate using a username and password that we will provide. An authenticated user will be able to generate an API token, so that the participant's system can authenticate. You will need to use the API token to connect to our system.

We use SHA-256 to hash message bodies.

Q: Do you have any requirements on your connection end-point (VPN, public etc.)?

Yes, your endpoint can only be HTTPS, and we will only allow connections to our endpoint via HTTPS. No VPN is required.

Q: Do you expect one person to be available during the calls to dispatch the assets in case of system failure?

We will not be defaulting to manual dispatch such as call text or email in the event of system failures during the trial.

Q: Will a hotline be available in case “company” detects a system anomaly from WPD side?

The general enquiry number will be live but anomalies will be addressed post event within the trial.