

# **Documentation to use the Elia Solar Forecasting web services**

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## Chapter 1. Introduction

### 1.1. Elia Solar Forecasting web page

A new web page is available on the Elia web site : The Elia Solar Forecasting web page.

It can be reached using the address <https://www.elia.be/en/grid-data/power-generation/Solar-power-generation-data/Graph>

This web page displays solar-PV generation forecasts, real-time estimations of actual solar-PV generation and historical solar-PV power data.

### 1.2. Elia Solar Forecasting web services

Elia supposes that some persons or companies interested in retrieving these values periodically will develop an IT application to handle these values.

To facilitate the development of these applications, Elia puts at disposal a list of web services that returns these values.

Technically : the protocol used is "REST Web API"

The advantage of this "REST Web API" is that these Web services may be called using a Web browser; See \_HTTPS communication through the Web browser

No client program are provided and thus it is up to the interested person to implement the call and the decomposition of the response: This document gives the way to communicate with theses Web services

Note: The historical values from previous months are available under CSV files format on the Elia Solar Forecasting web page but not under the web services.

### 1.3. Availability of web services

Currently, the calls to the Elia web services are anonymous and do not require any pre-registration.

However Elia may, at any time and without any notice, restrict the usage of these web services for security reasons.

## Chapter 2. Glossary

Term	Description
JSON	<b>J</b> ava <b>S</b> cript <b>O</b> bject <b>N</b> otation, is a text-based open standard designed for human-readable data interchange. The JSON format is more compact than XML format
REST	<b>R</b> epresentational <b>S</b> tate <b>T</b> ransfer
VBA	<b>V</b> isual <b>B</b> asic for <b>A</b> pplication
VB	<b>V</b> isual <b>B</b> asic
VB Script	<b>V</b> isual <b>B</b> asic <b>S</b> cripting Edition
XML	<b>E</b> xtensible <b>M</b> arkup <b>L</b> anguage

## Chapter 3. HTTPS Communication

This section describes the way to communicate with the Elia Solar Forecasting web services.

### 3.1. List of the web service methods

The Elia Solar Forecasting web services consists of following **methods** using the **REST protocol**:

- **GetRegions** is used to get an overview of all provinces and their corresponding ID: the result is an XML message
- **GetChartDataForZoneXml** shows all forecasting data as from the chosen start- & end date and for a certain region to be filled out by the user: the result is an XML message. For the service to work properly, the time between dateFrom en DateTo can be maximum one month.
- **GetCapacities** shows the installed solar capacity for the selected region as from the chosen start- & end date. For the service to work properly he time between dateFrom en DateTo can be maximum one month.

The following table indicates which message types are expected and returned by the different methods:

Method	Input message	Output	Format
<b>GetChartDataForZoneXml</b>	dateFrom & dateTo and sourceID to be filled out by user	Returns an object containing, for sourceId, a MostRecentForecast, DayAheadForecast, WeekAheadForecast, RealTime, MonitoredCapacity and LoadFactor per quarter	XML

Complete address of Web services methods

Method	URL
<b>GetChartDataForZoneXml</b>	<a href="https://publications.elia.be/Publications/publications/solarforecasting.v4.svc/GetChartDataForZoneXml?dateFrom=yyyy-mm-dd&amp;dateTo=yyyy-mm-dd&amp;sourceId=xxxx">https://publications.elia.be/Publications/publications/solarforecasting.v4.svc/GetChartDataForZoneXml?dateFrom=yyyy-mm-dd&amp;dateTo=yyyy-mm-dd&amp;sourceId=xxxx</a>

Addition information about input messages:

As input parameter the following regions are distinguished:

Region Name	SourceId
Antwerp	5
Belgium	1
Brussels	4
East-Flanders	11
Flanders	2

Flemish-Brabant	12
Hainaut	6
Liège	8
Limburg	7
Luxembourg	9
Namur	10
Wallonia	3
Walloon-Brabant	13
West-Flanders	14

### Handling the connection

To establish an Internet connection with the Elia Solar Forecasting web services, the following rules must be observed:

- **HTTPS must be used. No user id or password is required.**
- Request must be sent by HTTP GET method.
- The content type should be "text/xml" and character set "ISO-8859-1".

### Error handling

In case of an error (invalid request, internal error or else), each method returns:

- an [Error](#) message or
- an HTTP status of 510, 400, 401, etc.

instead of their normal output.

## 3.2. Connecting to the Elia Solar Forecasting web services

The web services root URL is :

<https://publications.elia.be/Publications/publications/solarforecasting.v4.svc>

All the examples of call in this document refer to this publication web site.

## 3.3. HTTPS communication through the Web browser

The Web services can be called via an Web browser.

Here is an example of how to communicate with the Elia Solar Forecasting web services with your browser: When typing the web service complete URL address on the URL of the web browser, the answer appears as a XML method:

Following tests are made using Internet Explorer 10.

Note that following browsers are also supported (some compatibility problems may arise):

- Chrome
- Opera
- Mozilla
- FireFox

```
<?xml version="1.0" encoding="UTF-8"?>
- <SolarForecastingChartDataForZone xmlns="http://schemas.datacontract.org/2004/07/Elia.PublicationService"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <ErrorMessage i:nil="true"/>
  <IntervalInMinutes>15</IntervalInMinutes>
  - <SolarForecastingChartDataForZoneItems>
    - <SolarForecastingChartDataForZoneItem>
      <DayAheadForecast>0</DayAheadForecast>
      <LoadFactor>0</LoadFactor>
      <MonitoredCapacity>2952.78</MonitoredCapacity>
      <MostRecentForecast>0</MostRecentForecast>
      <RealTime>0</RealTime>
      - <StartsOn xmlns:a="http://schemas.datacontract.org/2004/07/System">
        <a:DateTime>2017-03-20T23:00:00Z</a:DateTime>
        <a:OffsetMinutes>0</a:OffsetMinutes>
      </StartsOn>
      <WeekAheadForecast>-50</WeekAheadForecast>
    </SolarForecastingChartDataForZoneItem>
    - <SolarForecastingChartDataForZoneItem>
      <DayAheadForecast>0</DayAheadForecast>
      <LoadFactor>0</LoadFactor>
      <MonitoredCapacity>2952.78</MonitoredCapacity>
      <MostRecentForecast>0</MostRecentForecast>
      <RealTime>0</RealTime>
      - <StartsOn xmlns:a="http://schemas.datacontract.org/2004/07/System">
        <a:DateTime>2017-03-20T23:15:00Z</a:DateTime>
        <a:OffsetMinutes>0</a:OffsetMinutes>
      </StartsOn>
      <WeekAheadForecast>-50</WeekAheadForecast>
    </SolarForecastingChartDataForZoneItem>
    - <SolarForecastingChartDataForZoneItem>
      <DayAheadForecast>0</DayAheadForecast>
      <LoadFactor>0</LoadFactor>
      <MonitoredCapacity>2952.78</MonitoredCapacity>
      <MostRecentForecast>0</MostRecentForecast>
      <RealTime>0</RealTime>
      - <StartsOn xmlns:a="http://schemas.datacontract.org/2004/07/System">
        <a:DateTime>2017-03-20T23:30:00Z</a:DateTime>
```

### 3.4. HTTPS communication through VB Script

Here is an example of how to communicate with the Elia Solar Forecasting web services with a VB Script code.

This method is compatible with Windows 7. Note that the Microsoft XML Parser (MSXML) needs to be installed on the computers that will execute the script.

```
'This script calls the GetChartDataZone method of Elia Solar Forecasting Web
service
Set o = CreateObject("Msxml2.ServerXMLHTTP")
o.open "GET",
@@@https://publications.elia.be/Publications/publications/solarforecasting.v4
.svc/GetChartDataForZoneXml
o.setRequestHeader "Content-type","text/xml; charset=""ISO-8859-1""
o.send ""
WScript.Echo "HTTP STATUS : " & o.status & " text " & o.statusText
WScript.Echo o.responseText
```

Each main command is described here below:



```
Set o = CreateObject("Msxml2.ServerXMLHTTP")
```

We create an instance of the ServerXMLHTTP object that serves to establish HTTP connection to the Elia Solar Forecasting web services.

```
o.open "GET",  
@@@"https://publications.elia.be/Publications/publications/solarforecasting.v4.svc/GetChartDataForZoneXml"
```

Initialize an XMLHTTP request and specify the method, URL of the information for the request.

In this case we call the "GET" method of the GetChartDataForZoneXml method in synchronous mode.

```
o.setRequestHeader "Content-type","text/xml; charset=""ISO-8859-1""
```

We specify that the type of the request is XML, the length of the data we will transmit to the called method and the encoding (charset) must be ISO-8859-1.

```
o.send ""
```

We send the HTTP request to the Elia Solar Forecasting web services and wait for the response.

2 following lines allow to display on the screen the result of the request and the status of this result:

```
WScript.Echo "HTTP STATUS : " & o.status & " text " & o.statusText  
WScript.Echo o.responseText
```

Remark : The VB script may also be used within VBA (Microsoft Excel macro for example)

## Chapter 4. Messages specifications

This chapter describes the **messages output content**.

### 4.1. Methods with answer in XML

#### 4.1.1. Method GetChartDataForZoneXml answer

This method allows to get all forecasting data as from the chosen start- & end date and for a certain region to be filled out by the user.

The request has the following input parameters:

- **dateFrom=yyyy-mm-dd** : Start date of the output
- **dateTo=yyyy-mm-dd** : End date of the output
- **sourceId=xxxx** : Region for which the output applies

Output parameter is **SolarForecastingChartDataForZone**

Field	Cardinality	Data type	Description
DayAheadForecast	Mandatory	Float	The sum of day ahead forecast for all selected solar regions
LoadFactor	Mandatory	Float	The ratio between the real time measures and the related installed capacity
MonitoredCapacity	Mandatory	Float	The sum of monitored capacities for all selected solar regions
MostRecentForecast	Mandatory	Float	The sum of intra-day forecast for all selected solar regions
RealTime	Mandatory	Float	The sum of real time measures for all selected solar regions
StartsOn	Mandatory	DateTime	The concerned date and time
WeekAheadForecast	Mandatory	Float	The sum of week ahead forecast for all selected solar regions

An example of reply can be found in : Example of GetChartDataForZoneXml answer

## Chapter 5. Annex – examples of replies

### 5.1.1. Example of GetChartDataForZoneXml answer

```
- <SolarForecastingChartDataForZoneItems>
  - <SolarForecastingChartDataForZoneItem>
    <DayAheadForecast>0</DayAheadForecast>
    <LoadFactor>0</LoadFactor>
    <MonitoredCapacity>2952.78</MonitoredCapacity>
    <MostRecentForecast>0</MostRecentForecast>
    <RealTime>0</RealTime>
  - <StartsOn xmlns:a="http://schemas.datacontract.org/2004/07/System">
    <a:DateTime>2017-03-20T23:00:00Z</a:DateTime>
    <a:OffsetMinutes>0</a:OffsetMinutes>
  </StartsOn>
  <WeekAheadForecast>-50</WeekAheadForecast>
</SolarForecastingChartDataForZoneItem>
```