

Documentation to use the Elia Wind Forecasting web services

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Chapter 1. Introduction

1.1. Elia Wind Forecasting web page

The Elia Wind Forecasting web page is available on the Elia web site.

It can be reached using the address

<https://www.elia.be/en/grid-data/power-generation/wind-power-generation>

This web page displays wind-power generation forecasts, real-time estimates of actual wind-power generations and historic wind-power generation data.

1.2. Elia Wind 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 _HTTP 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 Wind Forecasting web page but not under the web services.

1.3. Availability of web services

The call to the Elia web services is anonymous for the aggregated GetForecastData method and do not require any pre-registration¹.

¹ 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	J ava S cript O bject N otation, is a text-based open standard designed for human-readable data interchange. The JSON format is more compact than XML format
REST	R epresentational S tate T ransfer
VBA	V isual B asic for A pplication
VB	V isual B asic
VB Script	V isual B asic S cripting Edition
XML	E xtensible M arkup L anguage

Chapter 3. HTTP Communication

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

3.1. List of the web service methods

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

- **GetForecastData** returns all aggregated forecast and measure data as from the chosen start- & end date. For the service to work properly, the time between dateFrom en dateTo can be maximum one month.

The user can apply the following filters:

Filter 1	Output
Aggregate Belgian Wind Farms	Both Offshore and Onshore wind farms
Offshore Wind Farms	Only Offshore Wind Farms
Onshore Wind Farms	Only Onshore Wind Farms

Filter 2	
Aggregate Belgian Wind Farms	Both Elia- and DSO connected wind farms
Elia-connected wind farms	Only Elia-connected wind farms
DSO-connected wind farms	Only DSO-connected wind farms

GetForecastData/Wind has an additional filter, allowing to restraint request to a list of specific windfarm

Filter 3	
SourceIds	List of comma separated WindFarm sourceIds

The result is an XML message.

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

Method	Input message	Output	Format
GetForecastData	dateFrom & dateTo and Filter 1 & Filter 2 as described above	Aggregated Forecasting data within selected dates and applied filters, per 15 minutes granularity	XML

Complete address of Web services methods:

Method	URL
<i>GetForecastData</i>	https://publications.elia.be/Publications/Publications/WindForecasting.v4.svc/GetForecastData?beginDate=yyyy-mm-dd&endDate=yyyy-mm-dd&isOffshore=&isEliaConnected

Handling the connection

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

- HTTP 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 Wind Forecasting web services

The web services root URL for methods without authentication is :

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

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

3.3. HTTP 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 Wind 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

```

https://publications.elia.be/Publications/Publications/WindForecasting.v4.svc/GetForecastData?beginDate=2020-11-05&endDate=
publications.elia.be
<?xml version="1.0" encoding="UTF-8"?>
- <WindForecastingGraphDataResponse xmlns:i="http://www.w3.org/2001/XMLSchema-instance"
  xmlns="http://schemas.datacontract.org/2004/07/Elia.PublicationService.DomainInterface.WindForecasting.v4">
  <ErrorMessage i:nil="true"/>
  <ForecastGraphItems>
    - <WindForecastingGraphItem>
      <Bid i:nil="true"/>
      <DayAheadConfidence10>19.21</DayAheadConfidence10>
      <DayAheadConfidence90>255.27</DayAheadConfidence90>
      <DayAheadForecast>19.21</DayAheadForecast>
      <LoadFactor>0.01</LoadFactor>
      <MonitoredCapacity>4460.83</MonitoredCapacity>
      <MostRecentConfidence10>24.14</MostRecentConfidence10>
      <MostRecentConfidence90>68.97</MostRecentConfidence90>
      <MostRecentForecast>24.14</MostRecentForecast>
      <Realtime>58.2</Realtime>
      <RealtimeExtrapolated i:nil="true"/>
    - <StartsOn xmlns:a="http://schemas.datacontract.org/2004/07/System">
      <a:DateTime>2020-11-04T23:00:00Z</a:DateTime>
      <a:OffsetMinutes>0</a:OffsetMinutes>
    </StartsOn>
      <WeekAheadConfidence10>3.95</WeekAheadConfidence10>
      <WeekAheadConfidence90>512.69</WeekAheadConfidence90>
      <WeekAheadForecast>156.82</WeekAheadForecast>
    </WindForecastingGraphItem>
    - <WindForecastingGraphItem>
      <Bid i:nil="true"/>
      <DayAheadConfidence10>19.18</DayAheadConfidence10>
      <DayAheadConfidence90>255.15</DayAheadConfidence90>
      <DayAheadForecast>19.18</DayAheadForecast>
      <LoadFactor>0.01</LoadFactor>
      <MonitoredCapacity>4460.83</MonitoredCapacity>
  </ForecastGraphItems>
</WindForecastingGraphDataResponse>
  
```

3.4. HTTP communication through VB Script

Here is an example of how to communicate with the Elia Wind Forecasting web services GetForecastGraphData 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 GetForecastGraphData method of Elia Wind Forecasting
Web service
Set o = CreateObject("Msxml2.ServerXMLHTTP")
o.open "GET",
@@@"https://publications.elia.be/Publications/Publications/WindForecasting.v4.
svc/GetForecastData?beginDate=2020-11-05&endDate=2020-11-
06&isOffshore=&isEliaConnected"
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 Wind Forecasting web services.

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



```
svc/GetForecastData?beginDate=2020-11-05&endDate=2020-11-06&isOffshore=&isEliaConnected"
```

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 GetForecastData 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 Wind 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 GetForecastGraphData answer

The method can be used to get an overview of all forecasting data within selected dates and applied filters.

This request has the following input parameters:

<https://publications.elia.be/Publications/Publications/WindForecasting.v4.svc/GetForecastData?beginDate=yyyy-mm-dd&endDate=yyyy-mm-dd&isOffshore=&isEliaConnected=>

Begin- & End Date	Filter 1	Filter 2
Begin- & End Date		
Start Date		beginDate=yyyy-mm-dd
End Date		endDate=yyyy-mm-dd
Filter 1		
Aggregate Belgian Wind Farms		&isOffshore=
Offshore Wind Farms		&isOffshore=true
Onshore Wind Farms		&isOffshore=false
Filter 2		
Aggregate Belgian Wind Farms		&isEliaConnected=
Elia-connected wind farms		&isEliaConnected=true
DSO-connected wind farms		&isEliaConnected=false

Output parameter name is **ForecastGraphItems**.

It is composed of:

4.1.1.1. WindForecastingGraphItem object description

Field	Cardinality	Data type	Description
Bid	Nullable	Boolean	Indication whether decremental bids are present within that QH
DayAheadConfidence10	Nullable	Float	P10 value of Day-Ahead forecast for selected wind farms

DayAheadConfidence90	Nullable	Float	P90 value of Day-Ahead forecast for selected wind farms
DayAheadForecast	Nullable	Float	Sum of Day-Ahead forecasts for all selected wind farms
LoadFactor	Nullable	Float	The ratio between the running average of upscaled power and the related installed capacity
MonitoredCapacity	Nullable	Float	Sum of installed capacities for all selected wind farms
MostRecentConfidence10	Nullable	Float	P10 value of Most Recent forecast for selected wind farms
MostRecentConfidence90	Nullable	Float	P90 value of Most Recent forecast for selected wind farms
MostRecentForecast	Nullable	Float	Sum of Most Recent forecasts for all selected windfarms
RealTime	Nullable	Float	Sum of upscaled measurements for all selected windfarms
StartsOn	Mandatory	DateTimeOffset	The concerned date and time (UTC time + Offset in minute for local time)
WeekAheadConfidence10	Nullable	Float	P10 value of Week-Ahead forecast for selected wind farms
WeekAheadConfidence90	Nullable	Float	P90 value of Week-Ahead forecast for selected wind farms
WeekAheadforecast	Nullable	Float	Sum of Week-Ahead forecasts for all selected wind farms

An example of reply can be found in : [Example of GetForecastData response](#)

4.1.2. Method GetForecastGraphDataBis answer

In addition to the data returned by GetForecastGraphData, this method also includes the DayAheadForecast picture taken at 11h00.

This request has the following input parameters:

<https://publications.elia.be/Publications/Publications/WindForecasting.v4.svc/GetForecastDataBis?beginDate=yyyy-mm-dd&endDate=yyyy-mm-dd&isOffshore=&isEliaConnected=>

Begin- & End Date

Begin- & End Date	
Start Date	beginDate=yyyy-mm-dd
End Date	endDate=yyyy-mm-dd

Filter 1

Filter 1	
Aggregate Belgian Wind Farms	&isOffshore=
Offshore Wind Farms	&isOffshore=true
Onshore Wind Farms	&isOffshore=false

Filter 2

Filter 2	
Aggregate Belgian Wind Farms	&isEliaConnected=
Elia-connected wind farms	&isEliaConnected=true
DSO-connected wind farms	&isEliaConnected=false

Output parameter name is **ForecastGraphItems**.

It is composed of:

4.1.2.1. WindForecastingGraphItem object description

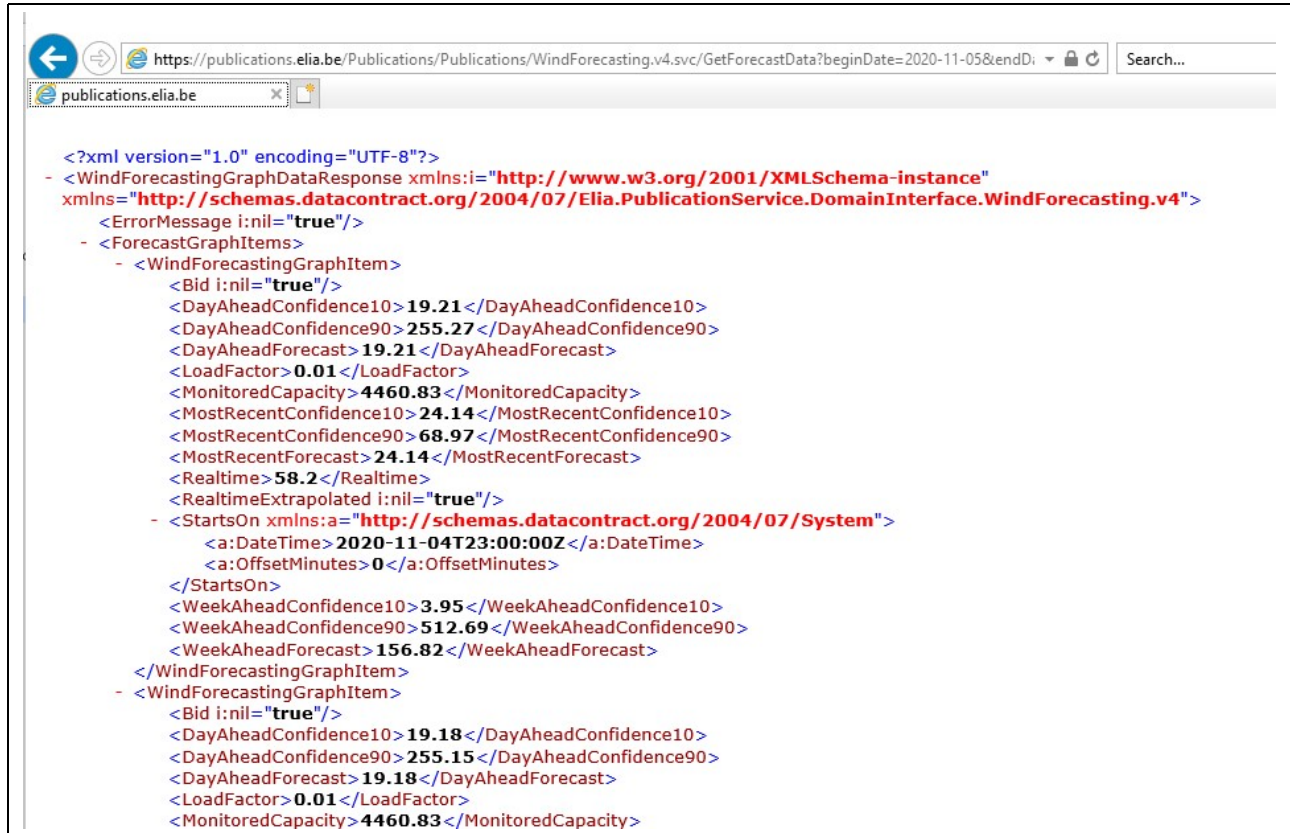
Field	Cardinality	Data type	Description
Bid	Nullable	Boolean	Indication whether decremental bids are present within that QH
DayAhead11hConfidence10	Nullable	Float	P10 value of Day-Ahead forecast at 11h for selected wind farms

DayAhead11hConfidence90	Nullable	Float	P90 value of Day-Ahead forecast at 11h for selected wind farms
DayAhead11hForecast	Nullable	Float	Sum of Day-Ahead forecasts at 11h for all selected wind farms
DayAheadConfidence10	Nullable	Float	P10 value of Day-Ahead forecast at 18h for selected wind farms
DayAheadConfidence90	Nullable	Float	P90 value of Day-Ahead forecast at 18h for selected wind farms
DayAheadForecast	Nullable	Float	Sum of Day-Ahead forecasts at 18h for all selected wind farms
LoadFactor	Nullable	Float	The ratio between the running average of upscaled power and the related installed capacity
MonitoredCapacity	Nullable	Float	Sum of installed capacities for all selected wind farms
MostRecentConfidence10	Nullable	Float	P10 value of Most Recent forecast for selected wind farms
MostRecentConfidence90	Nullable	Float	P90 value of Most Recent forecast for selected wind farms
MostRecentForecast	Nullable	Float	Sum of Most Recent forecasts for all selected wind farms
RealTime	Nullable	Float	Sum of upscaled measurements for all selected wind farms
StartsOn	Mandatory	DateTimeOffset	The concerned date and time (UTC time + Offset in minute for local time)
WeekAheadConfidence10	Nullable	Float	P10 value of Week-Ahead forecast for selected wind farms
WeekAheadConfidence90	Nullable	Float	P90 value of Week-Ahead forecast for selected wind farms
WeekAheadforecast	Nullable	Float	Sum of Week-Ahead forecasts for all selected wind farms

An example of reply can be found in : [Example of GetForecastDataBis response](#)

Chapter 5. Annex – examples of replies

5.1.1. Example of GetForecastData response



```

<?xml version="1.0" encoding="UTF-8"?>
- <WindForecastingGraphDataResponse xmlns:i="http://www.w3.org/2001/XMLSchema-instance"
  xmlns="http://schemas.datacontract.org/2004/07/Elia.PublicationService.DomainInterface.WindForecasting.v4">
  <ErrorMessage i:nil="true"/>
  - <ForecastGraphItems>
    - <WindForecastingGraphItem>
      <Bid i:nil="true"/>
      <DayAheadConfidence10>19.21</DayAheadConfidence10>
      <DayAheadConfidence90>255.27</DayAheadConfidence90>
      <DayAheadForecast>19.21</DayAheadForecast>
      <LoadFactor>0.01</LoadFactor>
      <MonitoredCapacity>4460.83</MonitoredCapacity>
      <MostRecentConfidence10>24.14</MostRecentConfidence10>
      <MostRecentConfidence90>68.97</MostRecentConfidence90>
      <MostRecentForecast>24.14</MostRecentForecast>
      <Realtime>58.2</Realtime>
      <RealtimeExtrapolated i:nil="true"/>
      - <StartsOn xmlns:a="http://schemas.datacontract.org/2004/07/System">
        <a:DateTime>2020-11-04T23:00:00Z</a:DateTime>
        <a:OffsetMinutes>0</a:OffsetMinutes>
      </StartsOn>
      <WeekAheadConfidence10>3.95</WeekAheadConfidence10>
      <WeekAheadConfidence90>512.69</WeekAheadConfidence90>
      <WeekAheadForecast>156.82</WeekAheadForecast>
    </WindForecastingGraphItem>
    - <WindForecastingGraphItem>
      <Bid i:nil="true"/>
      <DayAheadConfidence10>19.18</DayAheadConfidence10>
      <DayAheadConfidence90>255.15</DayAheadConfidence90>
      <DayAheadForecast>19.18</DayAheadForecast>
      <LoadFactor>0.01</LoadFactor>
      <MonitoredCapacity>4460.83</MonitoredCapacity>
  
```

5.1.2. Example of GetForecastDataBis response

```

<?xml version="1.0" encoding="UTF-8"?>
- <WindForecastingGraphDataBisResponse xmlns:i="http://www.w3.org/2001/XMLSchema-instance"
  xmlns="http://schemas.datacontract.org/2004/07/Elia.PublicationService.DomainInterface.WindForecasting.v4">
  <ErrorMessage i:nil="true"/>
  - <ForecastGraphItems>
    - <WindForecastingGraphItemBis>
      <Bid i:nil="true"/>
      <DayAhead11hConfidence10>19.21</DayAhead11hConfidence10>
      <DayAhead11hConfidence90>255.27</DayAhead11hConfidence90>
      <DayAhead11hForecast>19.21</DayAhead11hForecast>
      <DayAheadConfidence10>19.21</DayAheadConfidence10>
      <DayAheadConfidence90>255.27</DayAheadConfidence90>
      <DayAheadForecast>19.21</DayAheadForecast>
      <LoadFactor>0.01</LoadFactor>
      <MonitoredCapacity>4460.83</MonitoredCapacity>
      <MostRecentConfidence10>24.14</MostRecentConfidence10>
      <MostRecentConfidence90>68.97</MostRecentConfidence90>
      <MostRecentForecast>24.14</MostRecentForecast>
      <Realtime>58.2</Realtime>
      <RealtimeExtrapolated i:nil="true"/>
      - <StartsOn xmlns:a="http://schemas.datacontract.org/2004/07/System">
        <a:DateTime>2020-11-04T23:00:00Z</a:DateTime>
        <a:OffsetMinutes>0</a:OffsetMinutes>
      </StartsOn>
      <WeekAheadConfidence10>3.95</WeekAheadConfidence10>
      <WeekAheadConfidence90>512.69</WeekAheadConfidence90>
      <WeekAheadForecast>156.82</WeekAheadForecast>
    </WindForecastingGraphItemBis>
    - <WindForecastingGraphItemBis>
      <Bid i:nil="true"/>
      <DayAhead11hConfidence10>19.18</DayAhead11hConfidence10>
      <DayAhead11hConfidence90>255.15</DayAhead11hConfidence90>
  
```