

# Documentation to use the Elia Balancing web services

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## **Chapter 1. Introduction**

### **1.1. Elia Balancing publications**

Currently, some values related to the balancing mechanism are published on the Elia web site : see [www.elia.be](http://www.elia.be) / Grid Data / Balancing

The publications are available in table format and/or graph format. Download values of displayed value in XLS or CSV is also available.

To offer a more automated way to retrieve the data, some publications are available through web services.

### **1.2. Elia Balancing web services**

Elia supposes that some persons or companies are interested in retrieving these values periodically. To offer a more automated way to retrieve the data, some publications are available through web services.

No client program is provided and thus it is up to the interested person to implement the call and the decomposition of the response. This document explains the way to communicate with the web services.

### **1.3. Availability of Balancing 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. HTTP Communication

This section describes the way to communicate with the web services to retrieve the values of balancing publications.

### 2.1. Available publications through web services

The values of the following publications are available through web services :

- **Available Regulation Capacity** is used to get the values that can be activated to offset imbalances (see [www.elia.be](http://www.elia.be) / Grid Data / Balancing / Available Regulation Capacity). This publication contains 3 parts :
  - Available volume per product
  - Bidding prices per product
  - Bidding prices per volume level.
- **Using Regulation Capacity** is used to get the values used to maintain balance in Elia's control area (see [www.elia.be](http://www.elia.be) / Grid Data / Balancing / Using Regulation Capacity).
- **Imbalance Prices** is used to get the imbalance prices (see [www.elia.be](http://www.elia.be) / Grid Data / Balancing / Imbalance Prices).

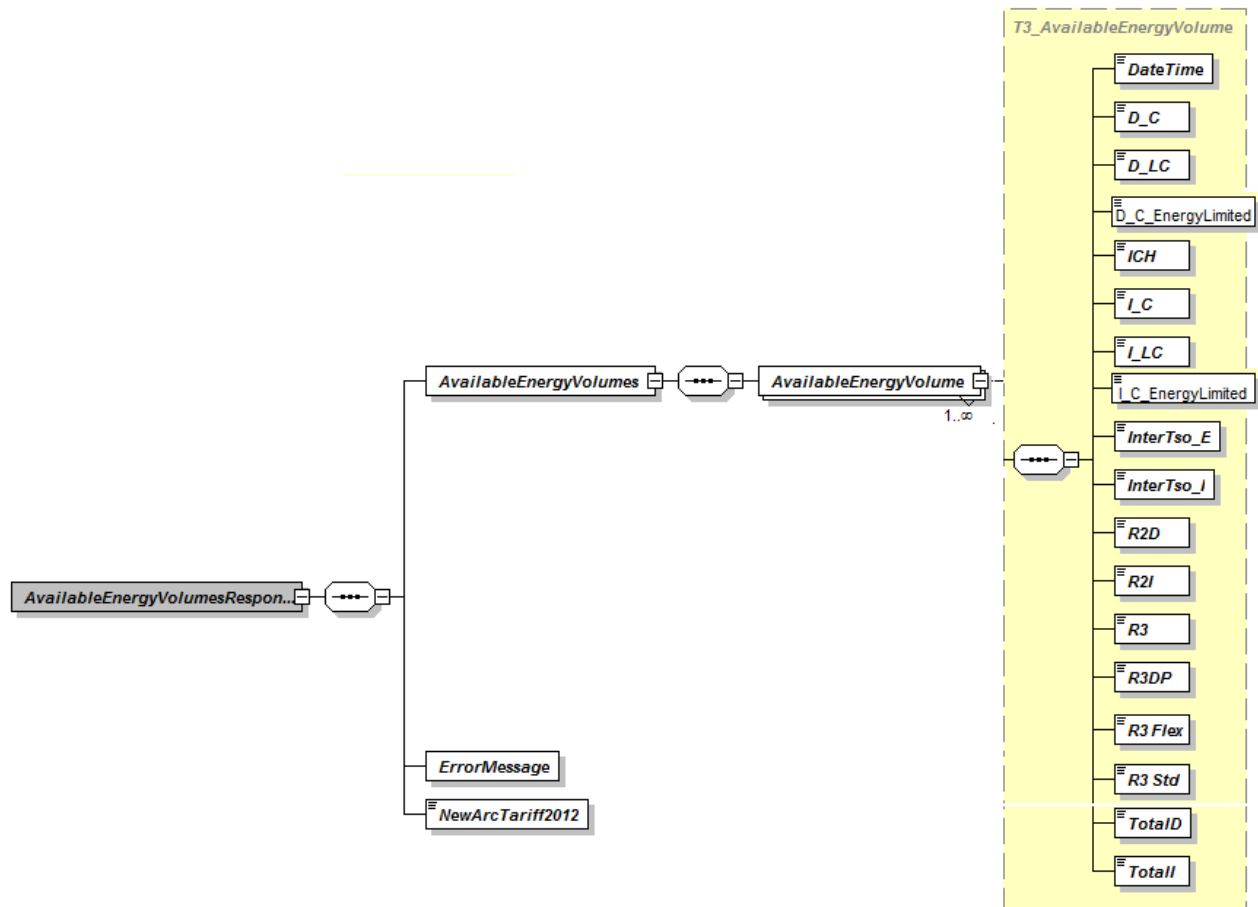
#### 2.1.1. Available Regulation Capacity / Available Volume per Product

URL :

<http://publications.elia.be/Publications/Publications/AvailableEnergy.v6.svc/GetAvailableEnergyVolumes?day=2016-09-24>

The day parameter is optional. It indicates the day for which the values are requested. If it is not specified, values for the current day are returned.

Output message:



See Elia web site for explanation of message content.

**Note1:**

Before 1-1-2017, R3 activations will be present in the fields R3 & R3DP  
 Since 1-1-2017, R3 activations will be present in the fields R3 Flex & R3 Std.

**Note2:**

Difference between v5 and v6 → new fields "I\_C\_EnergyLimited" & "D\_C\_EnergyLimited"

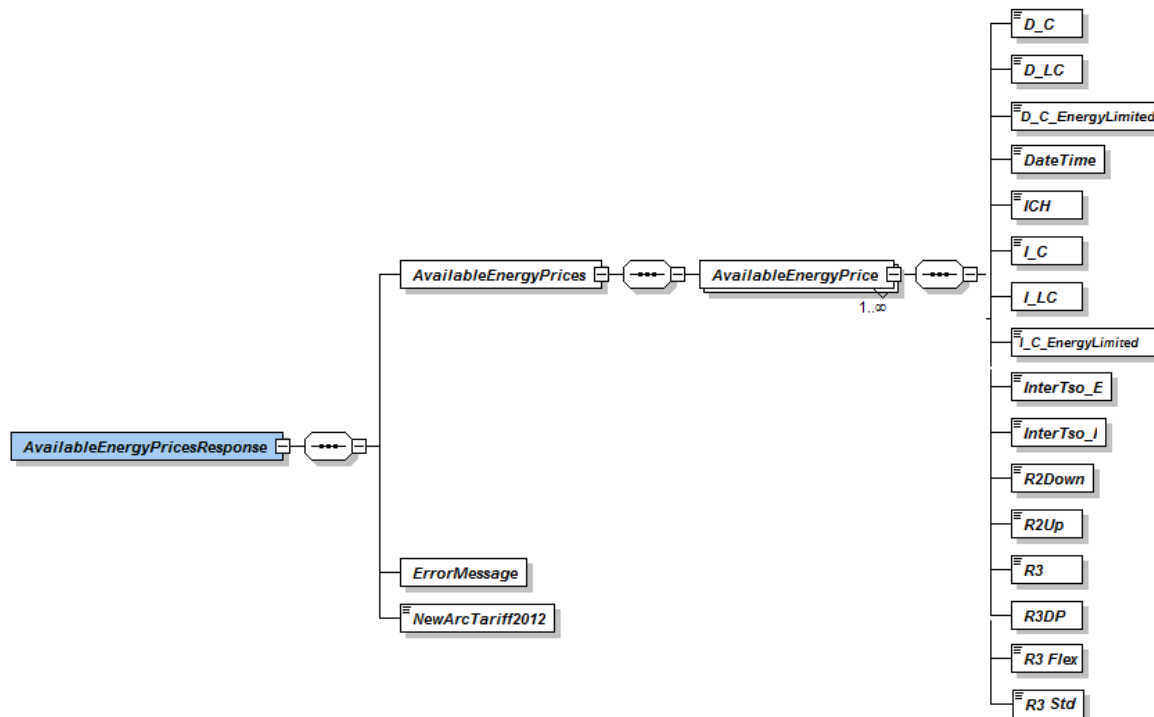
**2.1.2. Available Regulation Capacity / Available Volume per Product**

URL :

<http://publications.elia.be/Publications/Publications/AvailableEnergy.v6.svc/GetAvailableEnergyPrices?day=2017-01-24>

The day parameter is optional. It indicates the day for which the values are requested. If it is not specified, values for the current day are returned.

Output message :



See Elia web site for explanation of message content.

**Note1:**

Before 1-1-2017, R3 activations will be present in the fields R3 & R3DP  
 Since 1-1-2017, R3 activations will be present in the fields R3 Flex & R3 Std.

**Note2:**

Difference between v5 and v6 → new fields "I\_C\_EnergyLimited" & "D\_C\_EnergyLimited"

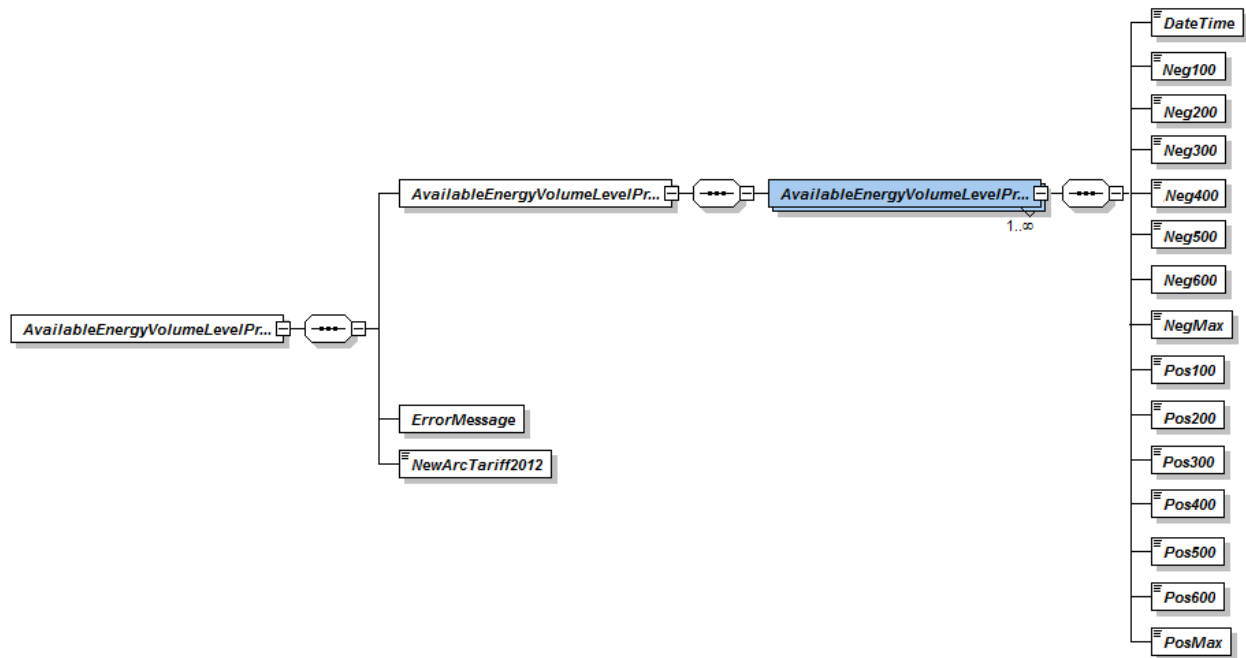
**2.1.3. Available Regulation Capacity / Available Volume per Product**

URL :

<http://publications.elia.be/Publications/Publications/AvailableEnergy.v6.svc/GetAvailableEnergyVolumeLevelPrices?day=2013-09-24>

The day parameter is optional. It indicates the day for which the values are requested. If it is not specified, values for the current day are returned.

Output message :



See Elia web site for explanation of message content.

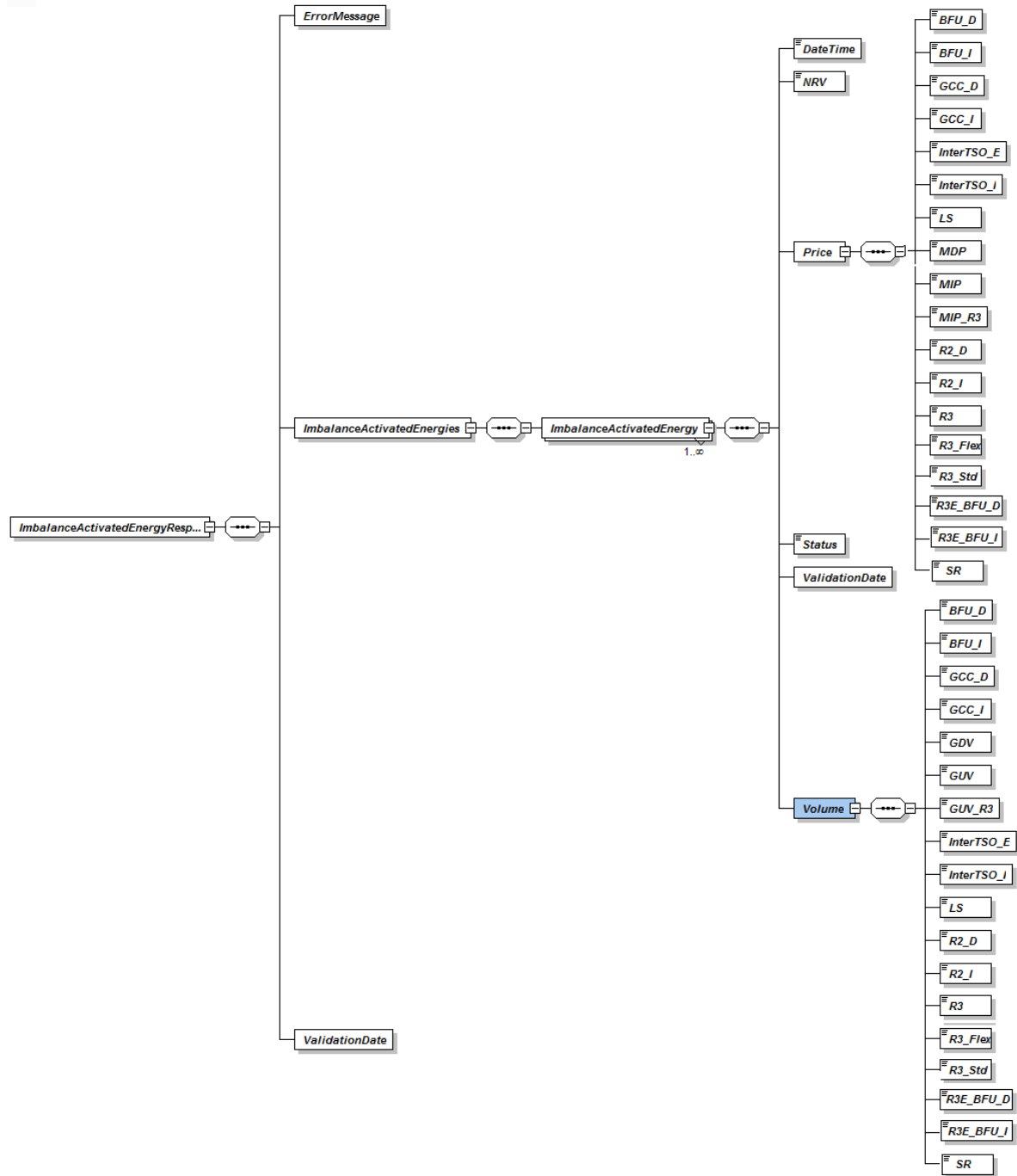
#### 2.1.4. Using regulation Capacity

URL :

<http://publications.elia.be/Publications/Publications/ImbalanceNrvPrice.v5.svc/GetImbalanceActivatedEnergy?day=2017-01-24>

The day parameter is optional. It indicates the day for which the values are requested. If it is not specified, values for the current day are returned.

Output message :





**Note1:**

Before 1-1-2017, R3 activations will be present in the fields R3

Since 1-1-2017, R3 activations will be present in the fields R3 Flex & R3 Std.

**Note2:**

Difference between v5 and v6 → new fields "R3E\_BFU\_D" & "R3E\_BFU\_I" (price & volume)

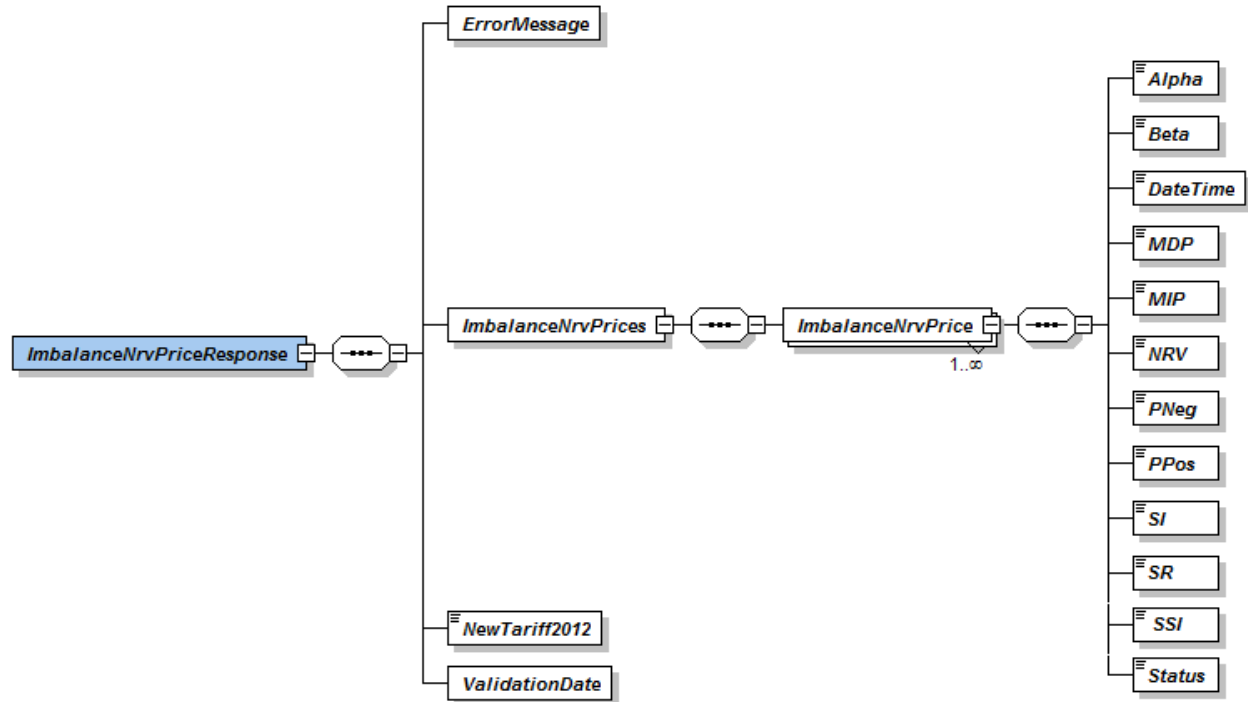
**2.1.5. Imbalance prices**

URL :

<http://publications.elia.be/Publications/Publications/ImbalanceNrvPrice.v5.svc/GetImbalanceNrvPrices?day=2017-01-24>

The day parameter is optional. It indicates the day for which the values are requested. If it is not specified, values for the current day are returned.

Output message :



## 2.2. Connecting to the Elia Balancing web services

### Handling the connection

To establish an Internet connection with the Elia Balancing 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.

## 2.3. HTTP communication through the Web browser

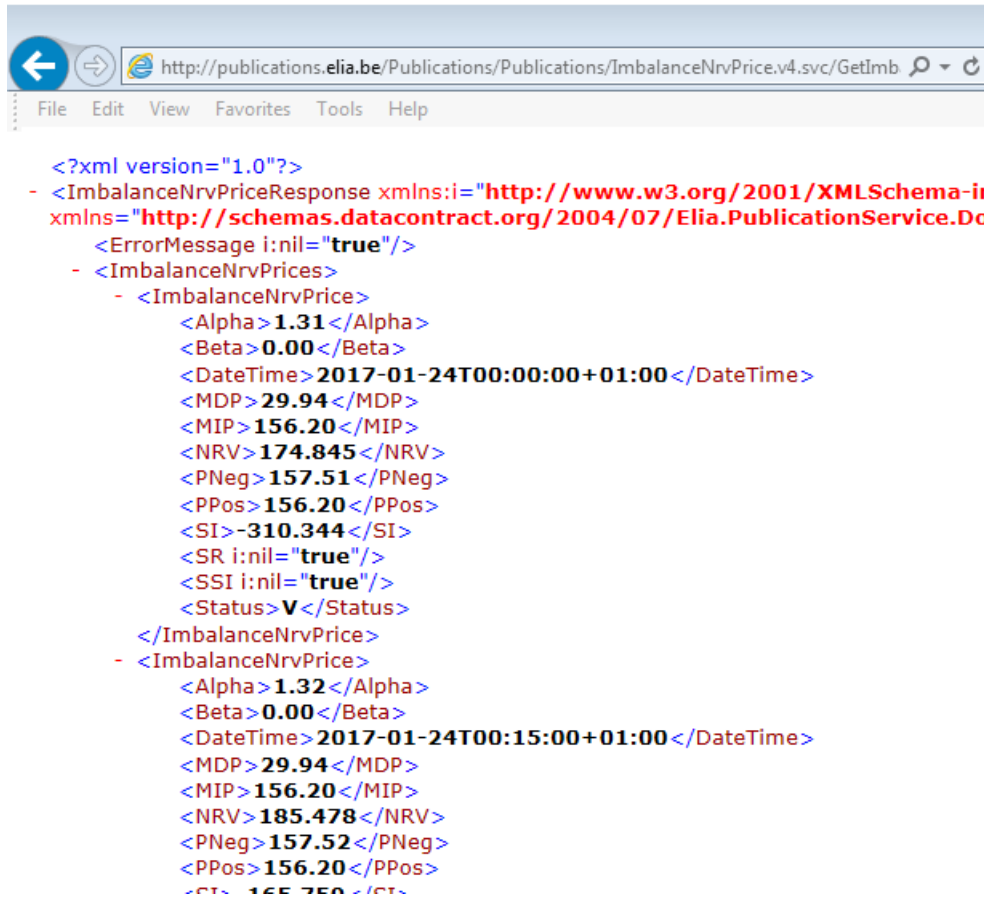
The Web services can be called via an Web browser.

Here is an example of how to communicate with the Elia Balancing 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"?>
- <ImbalanceNrvPriceResponse xmlns:i="http://www.w3.org/2001/XMLSchema-in
  xmlns="http://schemas.datacontract.org/2004/07/Elia.PublicationService.Do
    <ErrorMessage i:nil="true"/>
    - <ImbalanceNrvPrices>
      - <ImbalanceNrvPrice>
        <Alpha>1.31</Alpha>
        <Beta>0.00</Beta>
        <DateTime>2017-01-24T00:00:00+01:00</DateTime>
        <MDP>29.94</MDP>
        <MIP>156.20</MIP>
        <NRV>174.845</NRV>
        <PNeg>157.51</PNeg>
        <PPos>156.20</PPos>
        <SI>-310.344</SI>
        <SR i:nil="true"/>
        <SSI i:nil="true"/>
        <Status>V</Status>
      </ImbalanceNrvPrice>
      - <ImbalanceNrvPrice>
        <Alpha>1.32</Alpha>
        <Beta>0.00</Beta>
        <DateTime>2017-01-24T00:15:00+01:00</DateTime>
        <MDP>29.94</MDP>
        <MIP>156.20</MIP>
        <NRV>185.478</NRV>
        <PNeg>157.52</PNeg>
        <PPos>156.20</PPos>
        <SI>155.750</SI>
```

## Chapter 3. Annex – examples of replies

### 3.1.1. Example of Available Regulation Capacity / Available Volume per Product answer

```

<AvailableEnergyVolumesResponse
xmlns="http://schemas.datacontract.org/2004/07/Elia.PublicationService.DomainInterface.AvailableEnergy.V2"
xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <AvailableEnergyVolumes>
    <AvailableEnergyVolume i:type="AvailableEnergyVolume2012">
      <DateTime>2013-09-24T00:00:00+02:00</DateTime>
      <D_C>-1505.1</D_C>
      <D_LC>-2.7</D_LC>
      <D_C_EnergyLimited>0</D_C_EnergyLimited>
      <ICH>354.7</ICH>
      <I_C>1380.7</I_C>
      <I_LC>0</I_LC>
      <I_C_EnergyLimited>0</I_C_EnergyLimited>
      <InterTso_E>-250.0</InterTso_E>
      <InterTso_I>250.0</InterTso_I>
      <R2D>-140.6</R2D>
      <R2I>140.6</R2I>
      <R3>399.0</R3>
      <R3DP>0</R3DP>
      <R3Std>0</R3Std>
      <R3Flex>0</R3Flex>
      <TotalD>-1898.4</TotalD>
      <TotalI>2525.0</TotalI>
    </AvailableEnergyVolume>
    <AvailableEnergyVolume i:type="AvailableEnergyVolume2012">
      <DateTime>2013-09-24T00:15:00+02:00</DateTime>
      <D_C>-1416.9</D_C>
      <D_LC>-2.7</D_LC>
      <D_C_EnergyLimited>0</D_C_EnergyLimited>
      <ICH>354.7</ICH>
      <I_C>1403.2</I_C>
      <I_LC>0</I_LC>
      <I_C_EnergyLimited>0</I_C_EnergyLimited>
      <InterTso_E>-250.0</InterTso_E>
      <InterTso_I>250.0</InterTso_I>
      <R2D>-140.6</R2D>
      <R2I>140.6</R2I>
      <R3>399.0</R3>
      <R3DP>0</R3DP>
      <R3Std>0</R3Std>
      <R3Flex>0</R3Flex>
      <TotalD>-1810.2</TotalD>
      <TotalI>2547.5</TotalI>
    </AvailableEnergyVolume>
    .....
    <AvailableEnergyVolume i:type="AvailableEnergyVolume2012">
      <DateTime>2013-09-24T23:45:00+02:00</DateTime>
      <D_C>-1501.6</D_C>
      <D_LC>-21.5</D_LC>
      <D_C_EnergyLimited>0</D_C_EnergyLimited>
      <ICH>351.0</ICH>
      <I_C>1611.6</I_C>
      <I_LC>0</I_LC>
      <I_C_EnergyLimited>0</I_C_EnergyLimited>
      <InterTso_E>-250.0</InterTso_E>
    </AvailableEnergyVolume>
  </AvailableEnergyVolumes>
</AvailableEnergyVolumesResponse>

```

```
<InterTso_I>250.0</InterTso_I>
<R2D>140.4</R2D>
<R2I>140.4</R2I>
<R3>400.0</R3>
<R3DP>0</R3DP>
<R3Std>0</R3Std>
<R3Flex>0</R3Flex>
<TotalD>1913.5</TotalD>
<TotalI>2753.0</TotalI>
  </AvailableEnergyVolume>
</AvailableEnergyVolumes>
<ErrorMessage i:nil="true"/>
<NewArcTariff2012>true</NewArcTariff2012>
</AvailableEnergyVolumesResponse>
```

### 3.1.2. Available Regulation Capacity / Available Volume per Product answer

```

<AvailableEnergyPricesResponse xmlns="http://schemas.datacontract.org/2004/07/Elia.PublicationService.DomainInterface.AvailableEnergy.V2"
xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <AvailableEnergyPrices>
    <AvailableEnergyPrice>
      <D_C>-310.00</D_C>
      <D_LC>-180.00</D_LC>
      <D_C_EnergyLimited>0</D_C_EnergyLimited>
      <DateTime>2013-09-24T00:00:00+02:00</DateTime>
      <ICH>75.00</ICH>
      <I_C>315.00</I_C>
      <I_LC i:nil="true"/>
      <I_C_EnergyLimited>0</I_C_EnergyLimited>
      <InterTso_E>-100.00</InterTso_E>
      <InterTso_I>337.45</InterTso_I>
      <R2Down>14.86</R2Down>
      <R2Up>67.22</R2Up>
      <R3>296.37</R3>
      <R3DP i:nil="true"/>
      <R3Std>0</R3Std>
      <R3Flex>0</R3Flex>
    </AvailableEnergyPrice>
    <AvailableEnergyPrice>
      <D_C>-310.00</D_C>
      <D_LC>-180.00</D_LC>
      <D_C_EnergyLimited>0</D_C_EnergyLimited>
      <DateTime>2013-09-24T00:15:00+02:00</DateTime>
      <ICH>75.00</ICH>
      <I_C>315.00</I_C>
      <I_LC i:nil="true"/>
      <I_C_EnergyLimited>0</I_C_EnergyLimited>
      <InterTso_E>-100.00</InterTso_E>
      <InterTso_I>337.45</InterTso_I>
      <R2Down>14.86</R2Down>
      <R2Up>67.22</R2Up>
      <R3>296.37</R3>
      <R3DP i:nil="true"/>
      <R3Std>0</R3Std>
      <R3Flex>0</R3Flex>
    </AvailableEnergyPrice>
    .....
    <AvailableEnergyPrice>
      <D_C>-310.00</D_C>
      <D_LC>-180.00</D_LC>
      <D_C_EnergyLimited>0</D_C_EnergyLimited>
      <DateTime>2013-09-24T23:45:00+02:00</DateTime>
      <ICH>75.00</ICH>
      <I_C>315.00</I_C>
      <I_LC i:nil="true"/>
      <I_C_EnergyLimited>0</I_C_EnergyLimited>
      <InterTso_E>-100.00</InterTso_E>
      <InterTso_I>355.75</InterTso_I>
      <R2Down>14.73</R2Down>
      <R2Up>71.67</R2Up>
      <R3>296.37</R3>
      <R3DP i:nil="true"/>
      <R3Std>0</R3Std>
      <R3Flex>0</R3Flex>
    </AvailableEnergyPrice>
  </AvailableEnergyPrices>
  <ErrorMessage i:nil="true"/>
  <NewArcTariff2012>true</NewArcTariff2012>
</AvailableEnergyPricesResponse>

```

### 3.1.3. Available Regulation Capacity / Available Volume per Product answer

```
<AvailableEnergyVolumeLevelPricesResponse
xmlns="http://schemas.datacontract.org/2004/07/Elia.PublicationService.DomainInterface.AvailableEnergy.V2"
xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <AvailableEnergyVolumeLevelPrices>
    <AvailableEnergyVolumeLevelPrice>
      <DateTime>2013-09-24T00:00:00+02:00</DateTime>
      <Neg100>14.86</Neg100>
      <Neg200 i:nil="true"/>
      <Neg300 i:nil="true"/>
      <Neg400 i:nil="true"/>
      <Neg500 i:nil="true"/>
      <Neg600 i:nil="true"/>
      <NegMax>-100.00</NegMax>
      <Pos100>67.22</Pos100>
      <Pos200 i:nil="true"/>
      <Pos300>296.37</Pos300>
      <Pos400 i:nil="true"/>
      <Pos500 i:nil="true"/>
      <Pos600 i:nil="true"/>
      <PosMax>319.10</PosMax>
    </AvailableEnergyVolumeLevelPrice>
    <AvailableEnergyVolumeLevelPrice>
      <DateTime>2013-09-24T00:15:00+02:00</DateTime>
      <Neg100>14.86</Neg100>
      <Neg200 i:nil="true"/>
      <Neg300 i:nil="true"/>
      <Neg400 i:nil="true"/>
      <Neg500 i:nil="true"/>
      <Neg600 i:nil="true"/>
      <NegMax>-100.00</NegMax>
      <Pos100>67.22</Pos100>
      <Pos200 i:nil="true"/>
      <Pos300>296.37</Pos300>
      <Pos400 i:nil="true"/>
      <Pos500 i:nil="true"/>
      <Pos600 i:nil="true"/>
      <PosMax>319.10</PosMax>
    </AvailableEnergyVolumeLevelPrice>
    .....
    <AvailableEnergyVolumeLevelPrice>
      <DateTime>2013-09-24T23:45:00+02:00</DateTime>
      <Neg100>14.86</Neg100>
      <Neg200 i:nil="true"/>
      <Neg300 i:nil="true"/>
      <Neg400 i:nil="true"/>
      <Neg500 i:nil="true"/>
      <Neg600 i:nil="true"/>
      <NegMax>-100.00</NegMax>
      <Pos100>67.22</Pos100>
      <Pos200 i:nil="true"/>
      <Pos300>296.37</Pos300>
      <Pos400 i:nil="true"/>
      <Pos500 i:nil="true"/>
      <Pos600 i:nil="true"/>
      <PosMax>319.10</PosMax>
    </AvailableEnergyVolumeLevelPrice>
  </AvailableEnergyVolumeLevelPrices>
  <ErrorMessage i:nil="true"/>
  <NewArcTariff2012>>false</NewArcTariff2012>
</AvailableEnergyVolumeLevelPricesResponse>
```



### 3.1.4. Example of Using regulation Capacity answer

```

<ImbalanceActivatedEnergyResponse
xmlns="http://schemas.datacontract.org/2004/07/Elia.PublicationService.DomainInterface.ImbalanceNrvPrice.V1"
xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <ErrorMessage i:nil="true"/>
  <ImbalanceActivatedEnergies>
    <ImbalanceActivatedEnergy>
      <DateTime>2013-06-24T00:00:00+02:00</DateTime>
      <NRV>-90.10</NRV>
      <Price>
        <BFU_D>0</BFU_D>
        <BFU_I>149.60</BFU_I>
        <R3E_BFU_D>0</R3E_BFU_D>
        <R3E_BFU_I>0</R3E_BFU_I>
        <GCC_D>0</GCC_D>
        <GCC_I>0</GCC_I>
        <InterTSO_E>0</InterTSO_E>
        <InterTSO_I>0</InterTSO_I>
        <LS>0</LS>
        <MDP>4.85</MDP>
        <MIP>149.60</MIP>
        <MIP_R3>0</MIP_R3>
        <R2_D>4.85</R2_D>
        <R2_I>71.42</R2_I>
        <R3>0</R3>
        <R3_Std>0</R3_Std>
        <R3_Flex>0</R3_Flex>
      </Price>
      <Status>V</Status>
      <ValidationDate i:nil="true"/>
      <Volume>
        <BFU_D>0</BFU_D>
        <BFU_I>42.70</BFU_I>
        <R3E_BFU_D>0</R3E_BFU_D>
        <R3E_BFU_I>0</R3E_BFU_I>
        <GCC_D>0</GCC_D>
        <GCC_I>0</GCC_I>
        <GDV>132.80</GDV>
        <GUV>42.70</GUV>
        <GUV_R3>0</GUV_R3>
        <InterTSO_E>0</InterTSO_E>
        <InterTSO_I>0</InterTSO_I>
        <LS>0</LS>
        <R2_D>132.80</R2_D>
        <R2_I>0</R2_I>
        <R3>0</R3>
        <R3_Std>0</R3_Std>
        <R3_Flex>0</R3_Flex>
      </Volume>
    </ImbalanceActivatedEnergy>
    .....
    <ImbalanceActivatedEnergy>
      <DateTime>2013-06-24T23:45:00+02:00</DateTime>
      <NRV>-140.50</NRV>
      <Price>
        <BFU_D>0</BFU_D>
        <BFU_I>0</BFU_I>
        <R3E_BFU_D>0</R3E_BFU_D>
        <R3E_BFU_I>0</R3E_BFU_I>
        <GCC_D>0</GCC_D>
        <GCC_I>0</GCC_I>
        <InterTSO_E>0</InterTSO_E>
    
```

```

        <InterTSO_I>0</InterTSO_I>
        <LS>0</LS>
        <MDP>17.81</MDP>
        <MIP>0</MIP>
        <MIP_R3>0</MIP_R3>
        <R2_D>17.81</R2_D>
        <R2_I>71.42</R2_I>
        <R3>0</R3>
        <R3_Std>0</R3_Std>
        <R3_Flex>0</R3_Flex>
    </Price>
    <Status>V</Status>
    <ValidationDate i:nil="true"/>
    <Volume>
        <BFU_D>0</BFU_D>
        <BFU_I>0</BFU_I>
        <R3E_BFU_D>0</R3E_BFU_D>
        <R3E_BFU_I>0</R3E_BFU_I>
        <GCC_D>0</GCC_D>
        <GCC_I>0</GCC_I>
        <GDV>140.50</GDV>
        <GUV>0</GUV>
        <GUV_R3>0</GUV_R3>
        <InterTSO_E>0</InterTSO_E>
        <InterTSO_I>0</InterTSO_I>
        <LS>0</LS>
        <R2_D>140.50</R2_D>
        <R2_I>0</R2_I>
        <R3>0</R3>
        <R3_Std>0</R3_Std>
        <R3_Flex>0</R3_Flex>
    </Volume>
</ImbalanceActivatedEnergy>
</ImbalanceActivatedEnergies>
<ValidationDate>2013-07-12T06:23:47.013</ValidationDate>
</ImbalanceActivatedEnergyResponse>
    
```

### 3.1.5. Example of Imbalance Prices answer

```

<ImbalanceNrvPriceResponse xmlns="http://schemas.datacontract.org/2004/07/Elia.PublicationService.DomainInterface.ImbalanceNrvPrice.V1"
xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <ErrorMessage i:nil="true"/>
    <ImbalanceNrvPrices>
        <ImbalanceNrvPrice>
            <Alpha>0.00</Alpha>
            <Beta>0</Beta>
            <DateTime>2013-10-07T00:00:00+02:00</DateTime>
            <MDP>0</MDP>
            <MIP>61.05</MIP>
            <NRV>-130.50</NRV>
            <PNeg>0</PNeg>
            <PPos>0</PPos>
            <SI>48.70</SI>
            <SR>0</SR>
            <SSI>0</SSI>
            <Status>NV</Status>
        </ImbalanceNrvPrice>
        <ImbalanceNrvPrice>
            <Alpha>1.09</Alpha>
            <Beta>0</Beta>
            <DateTime>2013-10-07T00:15:00+02:00</DateTime>
            <MDP>0</MDP>
        </ImbalanceNrvPrice>
    </ImbalanceNrvPrices>
</ImbalanceNrvPriceResponse>
    
```

```
<MIP>61.02</MIP>
<NRV>-71.70</NRV>
<PNeg>0</PNeg>
<PPos>-1.09</PPos>
<SI>165.90</SI>
<SR>0</SR>
<SSI>0</SSI>
<Status>NV</Status>
</ImbalanceNrvPrice>
.....
<ImbalanceNrvPrice>
  <Alpha>0.00</Alpha>
  <Beta>0</Beta>
  <DateTime>2013-10-07T17:23:45+02:00</DateTime>
  <MDP>12.70</MDP>
  <MIP>85.20</MIP>
  <NRV>13.20</NRV>
  <PNeg>85.20</PNeg>
  <PPos>85.20</PPos>
  <SI>-20.40</SI>
  <SR>0</SR>
  <SSI>0</SSI>
  <Status>NV</Status>
</ImbalanceNrvPrice>
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