



**Contract template for Voltage & Reactive Power
Control Service**

Version for Public Consultation

“VSP Contract”

**Contract for the Voltage and Reactive Power
Control Service
(hereunder named "Contract")**

Contract for the Voltage and Reactive Power Control
Service
2025-01-01
Signature Elia:

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V3/2025

[ContractReference]
[ServiceProvider]
Signature [VSP]:



Contract Reference [ContractReference]

between

[Company], a company established under [Country] law with registered offices at [Address], company registration number [Number] and validly represented by [Name1] and [Name2], in their respective capacity of [Role1] and [Role2];

hereinafter referred to as the “[ServiceProvider]-VoltageandReactivePowerControlServiceProvider]” or “VSP”.

and

ELIA Transmission Belgium N.V./S.A., a company established under Belgian law with registered offices at Keizerslaan 20, B-1000 Brussels, registered at the Crossroad Bank for Enterprises under number 0476.388.3780731.852.231 and represented by [Name1] and [Name2], in their respective capacities of [Role1] and [Role2];

hereinafter referred to as “Elia”,

Elia and the [ServiceProviderVoltageandReactivePowerControlServiceProvider] may also hereinafter be referred to individually as “the Party” and collectively as “the Parties”.

Contract for the Voltage and Reactive Power Control Service
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Whereas:

- Elia is responsible for the operation of the Belgian transmission system over which it has an ownership right or, at least, a right of use (hereinafter referred to as the "Elia Grid");
- Elia has been appointed as Transmission System Operator (hereinafter referred to as the "TSO"), in accordance with the Belgian law of 29 April 1999 concerning the organisation of the electricity market (hereinafter referred to as the "Electricity Act") and supervises the safety, reliability and efficiency of the Elia Grid;
- Elia must therefore safeguard operational security, frequency quality and the efficient use of the interconnected system and resource – in accordance with the Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation (hereinafter referred to as "SOGL");
- [VSP] has expressed its willingness to become a Voltage Service Provider ("VSP") according to the terms and conditions of this Contract for the Voltage and Reactive Power Control Service; [The Parties understand that this Contract is not a contract granting access to the Elia Grid;](#)
- ~~— The Parties understand that this Contract is not a contract granting access to the Elia Grid;~~
- The Service is procured as part of the Grid User's obligation and/or voluntarily, according to [article 234 articles 3, 4, 208 and from 221 until 224](#) of the [Federal Grid Code](#) ~~and to article 12 quinquies of the Code of Conduct, and articles I.1.2 and IV.4.14.1~~ of the [Electricity Act](#); [TRPV](#);
- The General and Specific Conditions as detailed hereafter shall govern the Contract, as well as the rights and obligations of the Parties relating to the Voltage and Reactive Power Control Service, without prejudice to the applicable provisions of the Federal Grid Code, [of the Code of Conduct and of the TRPV](#) or, where appropriate, without prejudice to compliance with the relative Sensitivity Coefficient set in Annex 1 in accordance with the criteria defined to that end in the Connection Contract for the Technical Unit concluded with Elia;
- ~~— This Contract falls under the Terms and Conditions for Voltage and Reactive Power Control Services.~~

the following points have been agreed:

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PART I - SUBJECT MATTER AND SCOPE

- I.1.1 Without prejudice to the legal and regulatory framework, this Agreement governs the reciprocal rights and obligations of the Parties for the provision of the Voltage and Reactive Power Service by the Voltage Service Provider to Elia.
- I.1.2 This Agreement contains more specifically the conditions for acting as Voltage Service Providers or VSPs on a contractual basis in accordance with Article 5(1) of the Guideline on electricity transmission system operation (SOGL) as well as the mutual rights and obligations of the Parties in accordance with Article 4(1) and Articles 221, 222 and 223 of the Code of Good Conduct of 20 October 2022, for the provision of the Voltage and Reactive Power Service.
- I.1.3 The Specific Conditions and the Annexes of this Contract are subject to the derogation decision of the CREG referred to in Article 8, §1/1, of the Electricity Act. This means that this derogation decision shall take precedence over the provisions of this Contract and the Annexes, including, but not limited to, the provisions related to remuneration.
- I.1.4 These T&C VSP shall take effect after their approval by the relevant regulatory authorities and at the earliest on 1st of January 2027.
- I.1.5 The Art. III.7.1 and Art. III.7.7 shall enter into force upon :
- notification of Elia by the competent regulatory authority of the approval of the BRP T&C updated articles allowing BRP perimeter correction of assets satisfying these 2 conditions:
 - the asset active power is maintained at the Minimum Active Power Threshold in Offtake or, if the assets are equipped with a Compensator Mode, at the Minimum Active Power in Compensator Mode; and
 - while the asset activation request end time has not been reached.
 - one month after notification of such approval to the VSP with whom Elia concluded a VSP contract.



Subject Matter and Scope

Part I - SUBJECT MATTER AND SCOPE

[ContractType]

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PART II - GENERAL CONDITIONS

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Specific Conditions

PART III - SPECIFIC CONDITIONS

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TITLE 1: DEFINITIONS

ART. III.1 DEFINITIONS

Except where there is further specification aimed at application for the purposes of the present Contract, and without ignoring the stipulations of public order, the concepts defined in the Electricity Act, the electricity decrees and/or ordinances in relation to the organization of the electricity market and/or the various applicable Grid Codes and EU network codes and guidelines, as amended from time to time, are also included for the purposes of the Contract in the sense of these statutory or regulatory definitions. In addition, the following definitions apply for the purposes of the Contract:

<u>In addition, the following definitions apply for the purposes of the Contract:</u> Access Point	<p>For the purpose of this contract:</p> <ul style="list-style-type: none"> As defined in art. 2 §1 <u>295) 46°</u> of the <u>Federal-Grid-Code of Conduct</u> for an access to the transmission grid of Elia; For an access to the Elia Grid other than transmission grid: a point, defined by physical location and voltage level, at which access to the Elia Grid other than transmission grid is granted, with a goal to injecting or <u>taking-off</u> power, from an electricity generation unit, a consumption facility, a non-synchronous storage facility, connected to this grid;
Access Contract	As defined in art. 2 § 1 <u>85) 45°</u> of the <u>Federal-Grid-Code of Conduct</u> for an access to the transmission grid of Elia; for an access to the Elia Grid other than transmission grid, this means the contract between Elia and a Elia Grid User or a third party appointed by this Elia Grid User for the access of the installations of the Elia Grid User to the Elia Grid;
Access Contract Holder or "ACH"	The party requesting access to the Elia Grid who concludes the Access Contract with Elia;
Active Energy	As defined in art. 2 §1 <u>147) 54°</u> of the <u>Federal-Grid-Code of Conduct</u> ;
Active Power	As defined in art. 2 (20) of the EU Commission Regulation (EU) 2016/631 of 14 April 2016 establishing a network code on requirements for grid connection of generators;
Automatic Control Service Type	Control of the Grid Voltage and Reactive Power by means of an automated and continuous modulation of the production/absorption of Reactive Power by the VSP in function of voltage measured at the Service Measurement Point;
<u>Availability Status</u>	<u>As defined in article 3(71) of the SOGL;</u>
<u>Balance Responsible Party or "BRP"</u>	<u>As defined in article 2(7) of the EBGL and listed in the register of Balance Responsible Parties;</u>

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Specific Conditions

Closed Distribution System or "CDS"	As defined in art. 2 §1 32) 5° of the Federal-Grid Code of Conduct ; For the purpose of this Contract, CDS refers to CDS connected to the Elia Grid;
CDS Operator or "CDSO"	A natural or legal person appointed by the relevant authority as the operator of the CDS; As defined in Art. 2 §1 3) 11° of the Code of Conduct ;
CDS User	As defined in Art. 2 §1 583) 12° of the Federal-Grid Code of Conduct ;
Code of Conduct	The code of conduct, established by CREG by decision (B) 2409 of October 20, 2022, and as amended from time to time, establishing conditions for connection and access to the transmission grid and methods for calculating or setting conditions for the provision of ancillary services and access to cross-border infrastructure, including the procedures for voltage and Reactive Power management;
Communication Test	A test in which Elia certifies the VSP's ability to exchange information that is necessary to execute the contract as per Annex 8;
Communication Test	A test in which Elia certifies the VSP's ability to exchange information that is necessary to execute the contract as per Annex 8; The operation mode during which a Technical Unit provides the Automatic and/or Manual Control Service Type, while offtaking more Active Power than its Minimum Active Power Threshold in Compensator Mode and less Active Power than its Maximum Active Power Threshold in Compensator Mode ;
Compensator Mode	
Connection Contract	The contract concluded between a Elia Grid User and Elia, as defined in art. 2 §1 94) 22° of the Federal-Grid Code of Conduct ;
Controlling Technical Unit	A Technical Unit that can participate in both the Automatic Control Service Type and the Manual Control Service Type as per art. 6263 of the Federal Grid Code;
Day	Period of 24 hours starting at 00:00 CET morning until 24:00 CET;
External Communication Layer or "ECL"	Elia's communication layer used for communication between Elia and the VSP
Elia Grid	The electricity grid at which Elia holds the property right or at least a right of using and operating it, and for which Elia has been designated as system operator;
Elia Grid User	A Grid User connected to the Elia Grid;

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Specific Conditions

Grid User	As defined in art. 2 §1 573) 16° of the Federal-Grid-Code of Conduct ;
Elia Grid User Declaration	The official declaration of the Elia Grid User provided to Elia containing proof of designation of a VSP by the Elia Grid User, as per letter template advised in Annex 11 ; Annex 11;
Federal Grid Code	The provisions of the Royal Decree of 22 April 2019 29 November 2024 , as amended from time to time, establishing a federal technical regulation for the management of and access to the transmission grid;
Forced Outage	As defined in article 3(77) of the SOGL ;
Grid Voltage or "GV"	The voltage at the Service Measurement Point;
Injection Mode	The operation mode during which a Technical Unit provides the Automatic and/or Manual Control Service Type, while injecting more Active Power than its Minimum Active Power Threshold in Injection or while offtaking more Active Power than its Minimum Active Power Threshold in Offtake);
Interconnection Point	As defined in art 2§1 324) 33° of the Federal-Grid-Code of Conduct ;
Manual Control Service Type	Control of the Grid Voltage and Reactive Power by means of a step-wise modulation of the production/absorption of Reactive Power by the VSP following an explicit signal by Elia;
Minimum Active Power Threshold in Injection	Injected Active Power beyond which a Technical Unit starts delivering the Service in Injection Mode;
Minimum Active Power Threshold in Offtake	Offtaken Active Power beyond which a Technical Unit starts delivering the Service in Injection Mode;
Minimum Active Power Threshold in Compensator Mode	Offtaken Active Power beyond which a Technical Unit starts delivering the Service in Compensator Mode;
Maximum Active Power Threshold in Compensator Mode	Maximum offtaken Active Power beyond which a Technical Unit stops delivering the Service in Compensator Mode;
Technical Pmax or "P _{tech_max} "	A data that indicates the installed capacity (in MW) of a Technical Unit in line with articles 45 and 48 of the SOGL, as mentioned in the OPA Contract or as agreed by Elia and the VSP in case the Technical Unit is not included in a OPA Contract with Elia;
Month	Period starting at 00:00 the 1 st of the month until 24:00 the last day of the month;

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Specific Conditions

Non-controlling Technical Unit	A Technical Unit that can participate only in the Manual Control Service Type, not falling under criteria for Controlling Technical Units as per art. 6263 of the Federal Grid Code;
Open Qualification Procedure	A qualification procedure in accordance with public procurement rules in which candidates for provision of the Service are screened based on criteria set by ELIA in a publication on ted.europe.eu; ;
Power Measured or "P _{measured} "	The net quarter-hourly Active Power, i.e. the difference between gross offtake and gross injection, measured on a quarter-hourly basis at a Service Measurement Point. Net offtake from the Elia Grid is considered as a positive value, net injection into the Elia Grid is considered as a negative value;
Power Park Module or "PPM"	As defined in Art. 2(17) of the RfG
Power Park Module Or-PPMSaving Mode	Low-power steady-state consumption mode of Technical Units asynchronously connected to the power grid via an electronic power converter. In this Mode, the Technical Unit is still connected to the power grid and the absolute value of its active power is less than the absolute value of its Minimum Active Power Threshold in Injection and of its Minimum Active Power Threshold in Absorption and, if available, less than the absolute value of its Minimum Active Power Threshold in Compensator Mode. Automatic voltage regulation of Controlling Unit is not available in Power Saving Mode. As defined in Art. 2(17) of the RfG
Public Distribution Grid	As defined in art.2, §1 492) 10° of the Federal Grid Code of Conduct ;
Public Distribution Grid User	A Grid User connected to a Public Distribution Grid;
Distribution System Operator or "DSO"	As defined in art. 2, 11° of the Electricity Law;
Procurement Procedures	Procedures for acquiring the Reactive Power Control Service, approved by CREG in accordance with Article 8, §1/1 of the Electricity Law and published on Elia's website
Reactive Energy	As defined in art. 2 §1 457) 62° of the Federal Grid Code of Conduct
Reactive Power or "Q"	As defined in art. 2 (28) of the EU Commission Regulation (EU) 2016/631 of 14 April 2016 establishing a network code on requirements for grid connection of generators;
Reactive Power Ramping Rate	Rate of change of Reactive Power per second that a Controlling Technical Unit must respect when following a new Manual Setpoint

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	(only applies to assets able to modulate their Reactive Power ramp rate)
Reactive Power Requested Or "Q_{req}"	The Reactive Power requested (in MVar) for the activation of the Automatic Control Service Type and/or the Manual Control Service Type;
Reference Setpoint	Setpoint at which the Controlling Technical Unit is supposed to operate when Elia does not send a Setpoint to the VSP
RfG	The Commission Regulation (EU) 2016/631 of 14 April 2016 establishing a network code on requirements for grid connection of generators;
Sensitivity Coefficient (α_{eq})	As defined in Art. 67 of the Federal Grid Code;
Setpoint	The control variable of a certain Technical Unit at a certain moment, defining the relation between voltage and regulation of Reactive Power, expressed in MVar. The Setpoint, as ordered by Elia according to modalities in Annex 8 describes the requested stepwise regulation of the Technical Unit's production or absorption of Reactive Power as per the Automatic and Manual Control Service Types;
Service Type	Manual Control or Automatic Control services, who together form the Voltage and Reactive Power Control Service;
Service Measurement Point	A point within an electric grid taken as a reference for measuring the delivery of the Service as per Art. II.3.4 a) ; III.3.4 a) ;
Shutting Down	Transient period of decreasing active power injection starting from the Minimum Active Power Threshold in Injection until the Technical Unit's active power drops below 5% of the Minimum Active Power Threshold in Injection, for assets without Compensator Mode.
Starting Up	Transient period of increasing active power injection starting from 5% of the Minimum Active Power Threshold in Injection until the Technical Unit's active power increases above the Minimum Active Power Threshold in Injection, for assets without Compensator Mode.
Synchronous Power Generating Module Or "SPGM"	As defined in Art. 2(9) of the RfG;
Storage Power Module	As defined in Art. 1 § 2(27) 61° of the Federal Grid Code

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Specific Conditions

Of or "SPM"	
Prequalification Test	A test performed prior to Service provision according to the modalities in Art. II.3.3 ;III.3.3;
Technical Control Band in Compensator Mode	The Reactive Power that can be produced or absorbed at Elia's request, within the technically possible operating limits as described in Annex 4 Annex 1, for a Technical Unit operating in Compensator Mode;
Technical Control Band in Injection Mode	The Reactive Power that can be produced or absorbed at Elia's request, within the technically possible operating limits as described in Annex 4 Annex 1, for a Technical Unit operating in Injection Mode;
Technical Unit	A facility connected to the Elia Grid, to a Public Distribution Grid or to a CDS able to provide Reactive Power and Voltage Control Services to Elia through a VSP;
Technisch Reglement Plaatselijk Vervoernet van Elektriciteit Vlaams Gewest or "TRPV"	Technical regulation of the electricity transmission grid of the Flemish Region
Contract for the Outage Planning Agent or "OPA Contract"	The contract between Elia and the Outage Planning Agent in accordance with article 244126 of the Federal Grid Code of Conduct .
Contract for the Scheduling Agent or "SA Contract"	The contract between Elia and the Scheduling Agent in accordance with article 249131 of the Federal Grid Code of Conduct .
Voltage and Reactive Power Control Service or "Service"	The Service constituted by the Manual Control and/or the Automatic Control Service Types;
Voltage Service Provider or "VSP"	Any natural person or legal entity, as defined in art. 2342 §1 6) 48° of the Federal Grid Code of Conduct , and with whom Elia has concluded a contract to provide the Voltage and Reactive Power Control Service;
Week	Period starting at 00:00 Monday morning until 24:00 the next Sunday;

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TITLE 2: CONDITIONS FOR PARTICIPATION TO THE SERVICE

ART. III.2 CONDITIONS FOR VSP

III.2.1 Designation procedure of the VSP by the Elia Grid User

In accordance with art. 234, 5th al., 222, of the Federal Grid Code of Conduct, the VSP is the Elia Grid User of Technical Units providing the Service or a third party appointed by the Elia Grid User as VSP. In case of the designation by the Elia Grid User of a third party, the VSP must provide Elia with a copy of the Elia Grid User Declaration as figuring in Annex 11 signed by the Elia Grid User and the VSP.

III.2.2 In order to be considered to provide the Service, the VSP has satisfied the following conditions:

- 1) Provision of a declaration (referred to as "sworn statement") in which the VSP declares the fulfilment of the obligations related to payment of social security contributions in accordance with the legal provisions, fulfilment of the obligations related to payment of taxes in accordance with the legal provisions, and situation of non-bankruptcy.
- 2) Proof of a sound financial and economical situation of the VSP.

III.2.3 The VSP needs to comply with the conditions specified in Art. III.2.2 and the Procurement Procedures for the full duration of the contract

III.2.4 If the VSP no longer complies with the conditions in Art. III.2.2, Elia shall give notice of default to the VSP by registered letter and request the VSP to comply with its obligations within a period of 15 Business Days after receipt of the notice of default by registered letter. The period of 15 (fifteen) Business Days may be extended by Elia. If the VSP still fails to comply after this period, Elia shall proceed in accordance with Art. II.11 of the General Conditions..

III.2.2 III.2.5 Should the VSP for a certain Technical Unit change, the new party assuming his/its role also assumes the obligations deriving from this Contract.

III.2.3 III.2.6 When one or more of the Technical Units listed in Annex 1 is/are transferred to another VSP the VSP shall collaborate with the Elia Grid User(s) of the Technical Unit(s) to ensure correct transfer of the Technical Unit to the new VSP by providing all necessary information.

III.2.4 III.2.7 In application of art. 234, 4th al., of the Federal Grid Code, when/When the Service is delivered at an Access Point of a CDS, the relevant CDSO has the exclusive right to deliver the Service to Elia by undertaking the role of a VSP, or by appointing a VSP. If the CDSO provides the Service with Technical Units from a CDS User, Elia requires a proof of an agreement signed by both parties before the VSP starts delivering the Service/the CDSO confirms to Elia that it informed the CDS User about the specific modalities of the Service delivery, prior to participation in the Service of the involved Technical Units.

III.2.5 III.2.8 In application of art. 234, 4th al., of the Federal Grid Code, when/When the Service is delivered at an Interconnection Point, the relevant DSO has the exclusive right to deliver the Service to Elia by undertaking the role of a VSP, or by appointing a VSP. If the DSO provides the Service with/relies on Technical Units from a Public Distribution another Grid User, Elia requires a proof in providing its Service, pursuant Art. 29 §5 of an agreement signed by both parties before the SOGL, the VSP starts delivering DSO confirms to Elia that it informed the other Grid User about the specific modalities of the Service delivery, prior to participation in the Service of the involved Technical Units.

III.2.6 Open qualification Procedure

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Signature Elia:		Signature [VSP]:



Specific Conditions

~~III.2.71.1.1 Prior to submitting an offer to provide the Service, the VSP has satisfied the following conditions:~~

~~1) Provision of a declaration (referred to as "sworn statement") in which the VSP declares the fulfilment of the obligations related to payment of social security contributions in accordance with the legal provisions, fulfilment of the obligations related to payment of taxes in accordance with the legal provisions, and situation of non-bankruptcy.~~

~~1) Proof of a sound financial and economical situation of the VSP.~~

~~The VSP has applied by submitting a completed application form and the required documents, for the applicable Service to Elia. The application form and the template for the sworn statement can be downloaded on Elia's website or requested by e-mail to contracting_as@elia.be, with the contractual responsible as designated in Annex 10 in copy.~~

~~The VSP shall comply with the conditions set forth in the Open Qualification Procedure.~~

~~If it is confirmed that the VSP no longer complies with above conditions Elia will notify the VSP via a registered letter. If after 15 working days after reception of notification the VSP remains uncompliant to these conditions, the participation of the VSP in the Service and the remuneration will be suspended until compliance with these conditions has been fully restored.~~

ART. III.3 CONDITIONS FOR TECHNICAL UNITS

III.3.1 The VSP operates Technical Units that are able to produce and/or absorb the Reactive Power to and from the Elia Grid or has concluded an agreement with one or more Elia Grid User(s) or CDS User(s) that operate(s) Technical Units that are able to produce and/or absorb the Reactive Power to and from the Elia Grid.

III.3.2 The Technical Units used by the VSP to provide the Service are listed in Annex 1 (including the necessary technical cost and measurement information). The list of these Technical Units may change at any time subject to agreement by and between the Parties throughout the term of the Service delivery period.

III.3.3 The Technical Unit may participate in the Service under the following conditions:

Technical requirements

a) The Technical Units shall meet the requirements of the articles of the Federal Grid Code of the Code of Conduct and of the requirements of general application in accordance with article 7(4) of the RfG related to the Service as defined in the table below and, for the automatic service, comply with the relative Sensitivity Coefficient α_{eq} . The Sensitivity Coefficient is determined by Elia following discussions between Elia and the VSP as described in Annex 13 and in coherence with the criteria defined to that end in the Connection Contract (in which the technical characteristics of the Technical Unit are described). This coefficient is set in Annex 1.

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Technical Unit	Articles from the Federal Grid Code	Articles from the Code of Conduct	Articles from the requirements of general application in accordance with article 7(4) of the RfG ¹
New Type B,C,D SPGM	Art. 89 and 234	Art. 221, §1	Art. 4.3.1/5.5.1
New Type B,C,D PPM	Art. 93 and 234	Art. 221, §1	Art. 4.4.2/5.6.2
New Type B, C, D SPM	Art. 99 and 234	Art. 221, §1	n.a. ²
New HVDC interconnector	Art. 104 and 234	Art. 221, §1	
New generators connected on a HVDC link	Art. 106 and 234	Art. 221, §1	
New HVDC conversion stations at isolated extremity	Art. 107 and 234	Art. 221, §1	
New offshore PPM with onshore connection points	Art. 118, 119 and 234	Art. 221, §1	
New offshore PPM with offshore connection points	Art. 130, 131 and 234	Art. 221, §1	
Existing SPGM and PPM type C,D	Art. 62 to 68 and 234	Art. 221, §1	
Existing SPGM and PPM type B	Art. 62 to 68 and 234	Art. 221, §1	
Other Technical Units without obligation to provide the Service (such as Demand facilities directly connected to the Elia Grid, Technical Units connected to CDS/Public Distribution Grid, existing HVDC interconnector...)	Art. 234	Art. 221, §2	

Inserted Cells

Split Cells

Figure 1: Relevant articles concerning the requirements in terms of voltage and Reactive Power control capabilities applicable to different types of Technical Units

- b) Elia is entitled to evaluate, at any time during the Service delivery period, whether the Technical Units comply with the conditions mentioned in Art. [III.3.3III.3-3](#) a). For the avoidance of doubt, this does not entail any right for Elia to physically access the Technical Unit(s) without prejudice to any other regulation, i.e. the Federal Grid Code, regarding access to the Elia Grid User's connection installations. If Elia establishes that

² This table may be subject to evolutions of the legislation framework such as the adaptation of the regional grid codes



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(a) Technical Unit(s) fail(s) to comply with these conditions, the participation in the Service of the concerned Technical Unit(s) and the corresponding remuneration as set in Art. ~~II.8.3~~III.9.3 will be suspended until compliance has been fully restored.

Prequalification procedure: available technical control band

c) Before the beginning of Service delivery with a Technical Unit, Elia and the VSP shall begin the prequalification procedure of this Technical Unit by establishing together the available Technical Control Band of this Technical Unit (see details in Annex 13 a)).

Prequalification procedure: Service Measurement Point, characteristics of the Service

d) Before the beginning of Service delivery with a Technical Unit, Elia and the VSP shall begin the prequalification procedure of this Technical Unit by establishing together

- the reference Service Measurement Point (see details in Annex 13 b)).
- the Service steering and delivery control (see details in Annex 13 b)).
- the influence of local grid topology on the delivery of Reactive Power to the Service Measurement Point (see details in Annex 13 b)).

Prequalification procedure: communication test

~~e)a) Communication Test~~

d)e) Before the beginning of Service delivery with a Technical Unit, the VSP of this Technical Unit must perform a Communication Test to verify the correct exchange of messages as per Art. III.5.4 ~~and~~ III.5.5, III.6.7 up to III.6.18 and III.7.2 (see details in Annex 13.c)). The Service may not be delivered before successful completion of such a test.

e)f) The VSP undertakes to maintain communication means and processes operational at all times. If Elia notices that communication means and processes do not meet the requirements anymore, it may request performance of a new Communication Test, within a reasonable timeframe, until which Service delivery (and payment thereof) remains suspended. If Elia establishes that the VSP fails to comply with the Communication Test, the participation in the Service of the concerned Technical Unit(s) and the corresponding remuneration as set in Art. ~~II.8.3~~III.9.3 will be suspended until a successful new Communication Test has been completed.

Prequalification Test procedure: prequalification test

f)g) Before the beginning of Service delivery, Elia shall request a Prequalification Test to verify the characteristics of the Service delivery by ~~each Technical Unit~~the aggregation of all Technical Units located behind the same Service Measurement Point.

g)h) This test will at least involve an activation of the Service in which the VSP must provide the Service under conditions foreseen in the present Contract. Exact test modalities are described in Annex 13 d) .

h)i) The Prequalification Test will confirm the Reactive Power Technical Control Band made available, measurement modalities together with the modalities for calculation of Q_{req} (as per Annex 2) .

i)j) The Prequalification Test will not be considered as an activation of the Service.

j)k) Elia reserves the right to abort the Prequalification Test at any moment if it jeopardizes the security of the Elia Grid.

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Compliance

k) In case of non-compliance with one or more of the obligations in Article ~~II.3.3~~ III.3.3a) to i), the VSP shall take all necessary actions to become compliant again as soon as possible.

III.3.4 All Technical Units participating in the Service must be identified by a Service Measurement Point:

- a) A Service Measurement Point may correspond to:
- o for Technical Units connected to the Elia Grid or a CDS: the Access Point to the Elia Grid. In ~~exceptionnelle~~ exceptional circumstances following proposal by Elia and agreement of the VSP during the prequalification procedure as specified in Annex 13, the Service Measurement Point may be a point downstream from this Access Point and associated to measurement and metering devices;
 - o for Technical Units located in a Public Distribution grid: the Interconnection Point (at the high-voltage side of the Interconnection Point transformer);

These Service Measurement Points will be used as a reference for remuneration, delivery control and the provision of the Service by Technical Units according to modalities described in the present Contract.

- b) Cumulated measures for several Technical Units at a certain Service Measurement Point may be considered under the following conditions:
- c) all Technical Units behind the Service Measurement Point are represented by the same VSP;
- d) a cumulated regulation effect is demonstrable and measurable at the Service Measurement Point;
- e) the VSP must demonstrate that provision of the Service at the Service Measurement Point is not influenced in an unpredictable way by other Technical Units or local grid elements downstream from the Service Measurement Point;
- f) All Technical Units that are ~~PGM's or~~SPGM's, PPM's or SPM's are equipped with real-time Active Power measurements

When all above conditions are fulfilled, the cumulated Q_{req} of these Technical Units may be used to remunerate and control Service delivery as provided in Art. III.8, Art. III.9, and Art. I.1 and after agreement with Elia (following the analysis foreseen in Annex 13).

~~III.3.5 A Technical Unit supplying the Service cannot be a part of a strategic reserve contract.~~

~~III.3.6~~ III.3.5 Elia reserves the right to disqualify a Technical Unit if its participation in the Service jeopardizes the Elia Grid security after justification.

~~III.3.7~~ III.3.6 Technical Units are related to Access Point(s) included in valid Access Contract(s) .

~~III.3.8~~ III.3.7 Update of Annex 1:

The agreed list of Technical Units based on the template in Annex 1 should at all times be kept up to date by the VSP.

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The agreed list of Technical Units may be modified by the VSP by submitting an updated list based on the template in Annex 1 via e-mail to the contractual responsible of Elia as mentioned in Annex 10 under the following conditions:

- At the moment of the notification, the Technical Units must ~~be in respect~~ comply with the applicable conditions set in Art. ~~III.3.3~~III.3.3 and Art. ~~III.3.4~~III.3.4
- The updated list of Technical Units becomes effective at the beginning of the next Month following the notification of acceptance by Elia.

~~III.3.9~~III.3.8 Each Technical Unit must provide Elia a Technical Control Band with a minimum volume of 1 MVA_r for production or absorption of Reactive Power.

~~III.3.10~~III.3.9 For each Technical Unit participating to the Service in both Injection and Compensator Modes, the Technical Control Band in Injection Mode must be equal to the Technical Control Band in Compensator Mode.

~~III.3.11~~III.3.10 If the VSP is not designated as Access Contract Holder for the Access Point related to the concerned Technical Unit, the VSP ~~shall hold a bilateral agreement with~~ is obligated to inform the Access Contract Holder, ~~acknowledging and accepting about~~ the specific modalities of Service delivery that may interfere with the application of the access tariffs³, and in particular, the correction applied to the offtake or injection of additional reactive energy as per section 2.2 of the access tariffs and the power put at disposal as per section 1.3 of the access tariffs. ~~As part of this agreement the Access Contract Holder and VSP agree to settle any financial and data flows resulting from provision of the Service between them, without informing Elia and without Elia's arbitration. The VSP shall provide evidence of this agreement to Elia. If the VSP does not provide such an evidence, the participation in the Service of the concerned Technical Unit cannot start and the Technical Unit cannot be included in Annex 1.~~

~~III.3.11~~ Any financial settling and data flows between the Access Contract Holder and the VSP, resulting from executing the information obligation pursuant Art. ~~III.3.10~~, will occur without Elia's arbitration.

~~III.3.12~~ The VSP shall provide to Elia evidence of satisfying Art. ~~III.3.10~~.

~~III.3.13~~ If the VSP is not designated as Balance Responsible Party for at least one of its Technical Units able to inject or absorb active power, the VSP is obligated to inform the Balance Responsible Party, about the specific modalities of Service delivery that may interfere with the remuneration of the Service.

~~III.3.14~~ Any financial settling and data flows between the Balance Responsible Party and the VSP, resulting from executing the information obligation pursuant Art. ~~III.3.13~~, will occur without Elia's arbitration.

~~III.3.15~~ The VSP shall provide to Elia evidence of satisfying Art. ~~III.3.13~~.

~~III.3.12~~III.3.16 Controlling Technical Units

- a) The Controlling Technical Units participate in Automatic Control Service Type and in Manual Control Service Type, in particular under the conditions of articles 62 to 68 of the Federal Grid Code and in accordance with the provisions in the present Article.
- b) For these Technical Units, Reactive Power is produced or absorbed:

³ "Tarifs pour l'accès au réseau 2020 – 2023" that can be consulted on the Elia website: <https://www.elia.be/fr/clients/facturation-et-tarifs>

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- o automatically, during slow (minute) or sudden (second) variations in the Grid Voltage; and
 - o as the case may be, by changing the Setpoint of the automatic voltage regulator at Elia's request.
- c) Each Controlling Technical Unit may absorb or produce Reactive Power between the technical minimum ($Q_{\text{tech min}}$ or $Q_{\text{tech-}}$) and the technical maximum ($Q_{\text{tech max}}$ or $Q_{\text{tech+}}$) specified in Annex 1 for a normal operating voltage at the Service Measurement Point.
- d) Each Controlling Technical Unit may absorb or produce Reactive Power as per Art. III.3.16 c) for each voltage at the Access Point between 0,92590 and 1,05 times the normal operation voltage, except if a limit is defined after consultation by and between the parties following the voltage limitations of the ~~generator or following the stator current of the generator~~ Technical Unit.
- Any ~~stator current~~ Reactive Power control limitation at steady state of a Technical Unit shall not impede operation of the voltage control.
- e) Within the operating range defined in Articles III.3.16 c) and III.3.16 d), each Controlling Technical Unit shall be able to adjust its Reactive Power automatically in the event of Grid Voltage variations at the Service Measurement Point, according to a relative Sensitivity Coefficient α_{eq} that is determined by Elia following discussions between Elia and the VSP as described in Annex 13. The relative Sensitivity Coefficient of each Controlling Technical Unit is specified in Annex 1-Annex 1. It is the VSP's obligation to ensure that the relative Sensitivity Coefficient value corresponds at all times to reality. If necessary, the VSP may ask Elia to perform joint tests at his expense to validate the relative Sensitivity Coefficient. The VSP can update the relative Sensitivity Coefficient of each controlling Technical Unit in Annex 1 after providing a technical justification and with the agreement of Elia.
- f) In the event of unavailability of the Automatic Control service type of Controlling Units of a VSP Technical Unit, the VSP shall return the Technical Unit Reactive Power injection or absorption to the Reference Setpoint at the Access Point.

III.3.13 III.3.17 Non-controlling Technical Units

A Non-controlling Technical Unit participates only in Manual Control Service Type. It must be able to adapt its supply of Reactive Power between at least two levels agreed between Elia and the VSP. The Technical Control Band is defined in Annex 1.

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TITLE 3: ACTIVATION

ART. III.4 ACTIVATION OF AUTOMATIC CONTROL SERVICE TYPE

- III.4.1 The Automatic Control Service Type is to be activated without interruption when a Controlling Technical Unit is injecting (or offtaking) Active Power above or equal to its Minimum Active Power Threshold in Injection (or in Offtake) or offtaking Active Power between its Minimum Active Power Threshold in Compensator Mode and its Maximum Active Power Threshold in Compensator Mode (as agreed in Annex 1).
- III.4.2 Controlling Technical Units deliver the Automatic Control Service Type in accordance with Art. ~~III.3.12~~III.3.16.

ART. III.5 ACTIVATION OF MANUAL CONTROL SERVICE TYPE

- III.5.1 The Manual Control Service Type is to be available for activation without interruption when a Technical Unit is injecting (or offtaking) Active Power above or equal to its Minimum Active Power Threshold in Injection (or in Offtake) or offtaking Active Power between its Minimum Active Power Threshold in Compensator Mode and its Maximum Active Power Threshold in Compensator Mode (as agreed in Annex 1), or in Power Saving Mode.
- III.5.2 Elia may request a Technical Unit listed in Annex 1, in real time, to adjust its Setpoint from the time it is available in accordance with the provisions of Art. ~~III.3.12~~III.3.16 and ~~III.3.13~~III.3.17 (request hereinafter referred to as 'manual activation').
- III.5.3 Elia will activate in priority Technical Units with the objective of reducing total Service costs, in consideration of the following elements:
- o the location of the Technical Unit in the grid and the voltage level at which it is connected ;
 - o activation prices;
 - o the supply of Reactive Power from the automatic reaction of the machine or a previous Setpoint communicated by Elia;
 - o Elia may also consider other technical requirements encountered at such time as for example:
 - o the scheduled Active Power of the Technical Unit to identify how long a Technical Unit is still available to provide the Service after the Setpoint request
 - o the Technical Control Band of the Technical Unit and the margins ~~that~~ left after the request of the Setpoint.



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- III.5.4 Elia shall communicate a Setpoint to the VSP for the Technical Unit(s) selected under the conditions described in Article III.5.3. The Setpoint shall be communicated [by a B2B request message from Elia to the VSP as described in Annex 14](#).
- The VSP shall electronically confirm receipt of the Setpoint in maximum 10 seconds. In case of absence of confirmation, the manual activation will be considered as failed and a remuneration reduction will apply as per [00](#).
- The VSP shall have a maximum period of 5 minutes to attain the Setpoint of the Technical Unit(s) concerned from the time said value is sent by Elia.
- III.5.5 Elia shall request the activation of Manual Control Service Type by sending the VSP a Setpoint with at least the following information:
- o the selected Technical Unit(s);
 - o the new Setpoint to be applied, in terms of a Reactive Power value (expressed in MVar) to be attained within the time limit defined in Art. [III.5.4](#)/[III.5.4](#) for this Technical Unit.
- III.5.6 Once the volume of Reactive Power desired by Elia is attained by the Technical Unit, the latter may no longer change its Setpoint and only the automatic regulator may change the produced or absorbed Reactive Power, until Elia sends a new Setpoint.
- III.5.7 [Where](#) Elia does not send a Setpoint to the VSP, the Controlling Technical Unit shall operate from a [reference](#)/[Reference](#) Setpoint set by Elia and the VSP in Annex 1, corresponding to a volume of Reactive Power expressed in MVar and measured at the Service Measurement Point. Unless agreed differently in Annex 1, this Setpoint is considered to be [0MVar](#)/[0 MVar](#).
- III.5.8 Once a Technical Unit has been restarted and is injecting or offtaking Active Power above its Minimum Active Power Threshold in Injection or Offtake, irrespective of the last Setpoint sent by Elia, it is agreed that the Technical Unit shall supply the Service based on the Reference Setpoint set in Annex 1.
- III.5.9 When the Technical Unit is injecting (or offtaking) less than its Minimum Active Power Threshold in Injection (or in Offtake) (as agreed in Annex 1) and is not providing the Service in Compensator Mode, Elia may request via an explicit order that the Technical Unit stops producing or absorbing Reactive Power. This is not applicable during moments [where](#)/[when](#) the Technical Unit is [starting up](#)/[Starting Up](#) or [shuting down](#)/[Shutting Down](#).
- III.5.10 The procedures for exchanging a Setpoint between Elia and the VSP are described in detail in Annex 8.

ART. III.6 EXCHANGE OF INFORMATION

- III.6.1 In any case and for all Technical Units, the VSP must notify to Elia the grid topology, configuration of metering equipment and the resulting modalities of delivery of Reactive Power. In this regard, he must provide Elia with all relevant requested information.

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- III.6.2 The VSP agrees that metering data from Elia or the CDS Operator⁴, shall be used as the basis for the settlement as specified in Art. III.9 and Art. I.1.
- III.6.3 The VSP has the responsibility to be able to interpret messages received correctly and respond accordingly at all times.
- III.6.4 The VSP has the obligation to pro-actively maintain in good functioning order the communication channels for the correct exchange of messages as per Art. III.5.4. Any failure of activation due to unavailability or dysfunction of these communication channels (without fault by Elia) will be the VSP's sole responsibility.
- III.6.5 Elia reserves the right to request regular Communication Tests such as described in Art. ~~III.3.3~~III.3.3 to check whether the communication channels for the correct exchange of messages as per Art. ~~III.5.4~~III.5.4 are operational.
- III.6.6 The exchange of information for the performance of the Service will be directed to the respective contact persons of the Parties, as mentioned in Annex 10.
- III.6.7 Any restriction (forecasted or not) in the Reactive Power control capability is to be communicated ~~via telephone and e-mail by and between the contact persons identified in Annex 10 as soon as possible as described in Annex 14.~~
- III.6.8 In the event of technical problems with electronic data interchange in the context of the Manual Control Service Type, the ~~Parties shall use telephone communications as a back-up solutionsolutions presented in Annex 14 shall be used.~~
- III.6.9 In the event of a partial or full unavailability of the Technical Control Band of a Technical Unit of a VSP, the VSP has the obligation to communicate Reactive Power unavailability events to Elia as soon as possible.
- III.6.10 The communication, pursuant Art. III.6.9, must be done according to Annex 14. The following combinations of status and available Reactive Power are possible:

Availability Status	Meaning	Corresponding $Q_{min_Available}$ and $Q_{max_Available}$
A	Available	$ Q_{min_Available} \leq Q_{tech_min} $ and $ Q_{max_Available} \leq Q_{tech_max} $ and $Q_{min_Available} \neq Q_{max_Available}$
U	Unavailable	$Q_{min_Available} = Q_{max_Available}$
I	Testing	$ Q_{min_Available} \leq Q_{tech_min} $ and $ Q_{max_Available} \leq Q_{tech_max} $
FO	Forced Outage	$ Q_{min_Available} \leq Q_{tech_min} $ and $ Q_{max_Available} \leq Q_{tech_max} $

Where:

- $Q_{min_Available}$ is the maximum absolute value of available reactive power that can be absorbed by the Technical Unit of the VSP
- Q_{tech_min} is defined in Annex 1
- $Q_{max_Available}$ is the maximum absolute value of available reactive power that can be injected by the Technical Unit of the VSP

⁴ By default the Service Measurement Point is located at the Access Point or Interconnection Point meaning the Elia metering data shall be used. If the Service Measurement Point is located inside a CDS, the CDSO metering data shall be used.

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o Q_{tech max} is defined in Annex 1

III.6.11 The VSP has the obligation to message Elia as described in Annex 14 when one of its Technical Units enters into Power Saving Mode or leaves Power Saving Mode.

III.6.12 In the event of unavailability or regained availability of the Automatic Control service type or of the Manual Control service type of a VSP Technical unit, the VSP has the obligation to inform Elia as soon² as possible of the unavailability or regained availability of the Control service type, as mentioned in Annex 14.

III.6.13 Pursuant Art. III.6.12, the following Control service type availabilities can be submitted:

Available Control service type	Description
<u>Automatic & Manual Control available</u>	<u>Normal operation of Controlling Unit, assumed by default</u>
<u>Automatic & Manual Control unavailable</u>	<u>Both the Automatic Control Service and the Manual Control Service Controlling Unit are unavailable.</u> <u>If technically possible, the VSP shall set the Reactive Power setpoint of the Technical Unit before the start of the Control unavailability to the Reference Setpoint defined in Annex 1 of the VSP T&C, or if not technically achievable, it shall strive to reach 0 MVar injection/absorption.</u> <u>The VSP shall provide a reason for the unavailability.</u>
<u>Power Saving Mode</u>	<u>As defined in Art. II.1 Definitions</u>

III.6.14 The VSP submits changes of Reactive Power availabilities to Elia under Availability Status "A" (Available) or "U" (Unavailable) of Art.III.6.10 at least one hour before the quarter-hour of changed Reactive Power availability.

III.6.15 Only when the VSP is planning a test with potential impact on the transmission system, the VSP submits to Elia at least one month before the start of the test:

- An Availability Status "T" (Testing) with a Q_{min Available} and Q_{max Available} for the test period; and
- the reason for the planned test.

In accordance with the provisions of Art. 68 of the Code of Conduct, the test may only be executed after a written agreement has been provided by Elia to the VSP. Art. 69 to 70 also apply to this test.

III.6.16 The VSP submits changes of Reactive Power availabilities to Elia under Availability Status "FO" (Forced Outage) of Art.III.6.10 in cases not covered by Art. III.6.14 and Art. III.6.15.



Specific Conditions

III.6.17 ELIA reserves the right to request the following changes to the Availability Status provided by the VSP until 5 Working Days before the day of start of the unavailability:

<u>ELIA can request</u>		
<u>Indicated by the VSP</u>	<u>Availability Status</u>	<u>Meaning</u>
<u>Available (A) with $Q_{min_Available} \leq Q_{tech_min}$ or $Q_{max_Available} \leq Q_{tech_max}$ for excessive lengths of time or too high frequency of occurrences</u>	<u>Available (A) with $Q_{min_Available} = Q_{tech_min}$ and $Q_{max_Available} = Q_{tech_max}$</u>	<u>The Technical Unit is requested to be capable to inject (or offtake) reactive power at values set in the Contract and minimise durations of partial Reactive Power availability</u>
<u>Unavailable (U)</u>	<u>Available (A)</u>	<u>The Technical Unit is requested to be capable to inject (or offtake) reactive power</u>
<u>Testing (T)</u>	<u>Available (A)</u>	<u>The Technical Unit is requested to be capable to inject (or offtake) reactive power</u>

III.6.18 In the event of a partial or full unavailability of the Technical Control Band of a Technical Unit of a VSP, the VSP must inform Elia of a more detailed reason for the unavailability.

ART. III.7 ACTIVATION OF ASSETS EITHER SHUT DOWN OR IN POWER SAVING MODE, AND PROLONGATION OF ACTIVATION

III.7.1 Elia may request a Technical Unit listed in Annex 1 that is neither in Injection Mode, nor in Compensator Mode, nor Starting Up nor Shutting Down, to be activated and to increase its active power at the Minimum Active Power Threshold in Offtake or in Compensator Mode. This request only applies to Technical Unit whose Availability Control service type is not Automatic & Manual Control unavailable.

III.7.2 The request described in Art. III.7.1 is associated to an end time.

III.7.3 For Technical Units activated per Art. III.7.1, the VSP must maintain the Technical Units in Compensator Mode or, if the Compensator Mode is not available, at the Minimum Active Power Threshold in Offtake, until the activation request end time.

III.7.4 Elia may prolong the request described in Art. III.7.1 for Technical Units whose Available Control service type is not Automatic & Manual Control unavailable by providing a new end time.

III.7.5 Elia may also require Technical Units that are in Injection Mode or in Compensator Mode, and whose Available Control service type is not Automatic & Manual Control unavailable, to remain in Compensator Mode, or if the Compensator Mode is not available, to maintain their active power above or at the Minimum Active Power Threshold in Offtake. This is done by sending a request as described in Art. III.7.1.

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- III.7.6 A BRP perimeter correction shall be applied to the BRP of the VSP Technical Unit activated per Art. III.7.1 or per Art. III.7.5 if the following conditions are met:
- a) The Technical Unit is in Compensator Mode, if Compensator Mode is available, otherwise remains exactly at the Minimum Active Power Threshold in Offtake; and
 - b) the end time specified in the activation request per Art. III.7.1 or per Art. III.7.5 has not been reached yet.
- III.7.7 The Technical Unit activated per Art. III.7.1 and per Art. III.7.5 needs to remain available to deliver the Reactive Power control service requested by Elia until the endtime defined in the request. This activation request with an endtime corresponds to activation requests per Art. Error! Reference source not found. and Art. Error! Reference source not found..
- III.7.8 The VSP shall indicate in Annex 1 the Technical Units equipped with a Power Saving Mode.
- III.7.9 If the Technical Unit activated per Art III.7.1 is in Power Saving Mode before activation, this Technical Unit must adjust its Reactive Power Setpoint in accordance with the provisions of Art. III.5 (request hereinafter referred to as 'manual activation').
- III.7.10 If the Technical Unit activated per Art III.7.1 is not in Power Saving Mode before activation, this Technical Unit must adjust its Reactive Power setpoint according to Art. III.4 or Art. III.5 in accordance with the Technical Unit Controlling or Non-Controlling Type as soon as the Technical Unit enters either the Compensator Mode if available, or the Injection Mode.
- III.7.11 The VSP shall indicate in Annex 1 the cost of activating its Technical Units per Art. III.7.1. This cost shall not apply in case of activation per Art. III.7.5.
- III.7.12 The VSP shall indicate in Annex 1 the maximum time to activate its Technical Units per Art. III.7.1.

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TITLE 4: ACTIVATION CONTROL

Art. III.7 ART. III.8 ACTIVATION CONTROL

III.7.4 III.8.1 Automatic Control Service Type

- a) Pursuant to Art. ~~III.3.10~~ III.3.16, each Controlling Technical Unit must be able to adjust its Reactive Power production or absorption automatically in the event of Grid Voltage variation at its Service Measurement Point, in accordance with the relative Sensitivity Coefficient α_{eq} as defined in Annex 1.
- b) To ensure that the automatic regulator of a Controlling Technical Unit provides the Automatic Control Service Type correctly, Elia verifies whether the Reactive Power actually supplied by the Technical Unit corresponds to the Reactive Power that should have been supplied in response to variations of the Grid Voltage measured at that same Service Measurement Point.
- c) Elia uses nearly all quarter-hourly metering data to carry out this verification monthly for each Technical Unit for delivery in Month M-2, ~~starting out with six samples. Each sample pertains. Quarter hours not considered are limited to a 5-~~
 - 1. The quarter hour period of a setpoint request
 - 2. The quarter hour following a quarter hour with a setpoint request
 - 3. The first quarter hour of every dayElia applies the penalty remuneration reduction described in Art. ~~III.9.4~~ III.10.1 where necessary.
- d) Delivery control criteria, modalities and non-supplied volume calculation for the Automatic Control Service Type are described in Annex 3.
- e) In any case, Grid Voltage according to which regulation is performed is measured at the Service Measurement Point according to modalities of Art. III.6.

III.7.2 III.8.2 Manual Control Service Type

- a) Pursuant to Art. III.3.16 and III.3.17, each Controlling and Non-Controlling Technical Unit must be able to adjust its Reactive Power production or absorption upon request by Elia as per Art. III.5.4.
- b) To ensure that a Controlling or Non-Controlling Technical Unit provides the Manual Control Service Type correctly, Elia ~~shall check whether verifies:~~
 - o Whether the corresponding Reactive Power was supplied correctly at the Service Measurement Point by the selected Technical Unit within the timeframe mentioned in Art. III.5.4. To this end, Elia shall use the 30" remote measurements (or the most precise measurements available) at the Service Measurement Point of the Reactive Power supplied (Q).
 - o Whether the Reactive Power actually supplied by the Technical Unit corresponds to the requested Reactive Power for every quarter hour except for those listed in Art. III.8.1.c.
- b)c) Elia shall carry out this verification monthly for each Technical Unit for delivery in Month M-2 ~~on six samples of activation requests by Elia over six different days.~~ Elia shall apply a penalty remuneration reduction as described in Art. III.10.1 where necessary.

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- e)d) Elia shall select for this verification the activation requests pertaining to a minimum volume of 5% of Q_{tech} max (value defined in Annex 1) when the interval with the following activation request is superior to 5 minutes.
- e)e) Delivery control criteria and non-supplied volume calculation for the Manual Control Service Type are described in Annex 4.

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TITLE 5: REMUNERATION AND ~~PENALTIES~~REMUNERATION REDUCTION

~~Art. III.8~~ART. III.9 REMUNERATION

~~III.8.1~~III.9.1 ~~Following article 12quinquies of the Electricity Act, prices can be fixed by means of Royal Decree. In such an event, prices fixed by the Royal Decree become applicable and prevail over prices fixed according to Applicable Prices Annex 12.B. The prices for the provision of the Service by the VSPs of Technical Units with Available, Testing or Forced Outage Status and whose active power is higher than the Minimum Active Power Threshold in Compensator Mode or than the Minimum Active Power Threshold in Injection or than the Minimum Active Power Threshold in Offtake, determined in accordance with the Procurement Procedures and/or, as the case may be, the derogation decision of the CREG referred to in Article 8, §1/1 of the Electricity Law, are defined in Annex 12.B.~~

~~III.8.2~~III.9.2 Elia starts remunerating the Service for a Technical Unit provided that the conditions set in Art. III.3 are satisfied.

~~III.8.3~~III.9.3 The remuneration for the Service, without prejudice to any ~~penalties~~remuneration reductions defined in Art.III.10.1, shall consist of the remuneration for the activation costs for each Technical Unit and will depend on the price (as ~~agreed~~included in Annex 12) and Q_{req} volume for both Automatic and Manual Control Service Types for each quarter-hour.

~~III.8.4~~III.9.4 The remuneration basis is the Reactive Power Requested (or Q_{req}), calculated as per Annex 2 meaning a volume of MVA_r that corresponds to Elia's regulation need at the given quarter-hour.

~~III.8.5~~III.9.5 The remuneration for the Service can also consist of a compensation of the costs related to an increase of the tariff for power put at disposal for offtake (PPAD) due to the delivery of the Service, provided that such compensation was integrated in the VSP offer with a detail of the additional supported costs.

Art. III.9 — PENALTIES

ART. III.10 REMUNERATION REDUCTION

~~III.9.4~~III.10.1 If Elia establishes, based on activation controls for each Service Type according to Art. III.8, Annex 3 and Annex 4, that the VSP has failed for a particular quarter-hour to activate the quantity of Q_{req} , Elia applies a ~~penalty~~remuneration reduction as described in Annex 6 and/or 00.

~~III.10.2~~ If Elia establishes, based on the availability communication of the VSP, that the unavailability or partial unavailability of a Technical Unit is due to a reason other than a technical issue, Elia applies a remuneration reduction as described in Annex 6 and/or 00.

~~III.9.2~~III.10.3 The sum of the ~~penalties~~remuneration reductions under Art.~~II.9.4~~III.10.1 will be subject to a monthly cap, without prejudice to any liability on the part of the VSP for the non-fulfillment of his obligations in accordance with Art. I.6 of the General Conditions. The ~~penalty~~remuneration reduction for each month may not exceed the VSP's remuneration for the Service as set in Art. ~~II.8.3~~III.9.3 for this month for the concerned Technical Unit or the aggregation of Technical Units as per Art. III.3.4 b).

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TITLE 6: INVOICING

Art. III.10 ART. III.11 INVOICING AND PAYMENT

III.10.4 III.11.1 Via a joint validation platform or other agreed channel, Elia will present the VSP a report, by or before the fifteenth day of Month M, related to the monitoring of the Reactive Power provided by the VSP in Month M-2. This report will indicate, amongst others, all [penaltiesremuneration reductions](#) for Month M-2 as calculated by Elia in accordance with Art. III.10.1, showing the method of calculation and all data on which the calculation is based.

III.10.2 III.11.2 The VSP shall send the pro-forma invoice to Elia, to the contact persons in Annex 10 by or before the 25th (twenty-fifth) day of each Month M. The pro-forma invoice shall indicate in particular:

- o the remuneration for the activation of the Service in Month M-2, calculated in accordance with Art. III.9;
- o where applicable, the amount of the [penaltiesremuneration reductions](#) in Month M-2, as calculated by Elia in accordance with Art.III.10.1;
- o the items in accordance with Art. ~~I.5.1~~ **Error! Reference source not found.** of the General Conditions.

III.10.3 III.11.3 Elia shall either approve or reject the pro-forma invoice within 5 working days of receiving it. In accordance with the pro-forma invoice, the invoice may be sent to the Invoicing & Payment department after Elia has approved the pro-forma invoice or after 5 working days without response.

III.10.4 III.11.4 Disputes from the VSP regarding the report and [penaltiesremuneration reductions](#) stipulated in Art. I.1 must be reported within 25 calendar days starting from the day following Elia's submission of the respective report. Should this occur, the Parties shall enter into negotiations with each other with a view to reach an agreement in accordance with [Art. I.13](#) **Error! Reference source not found.** of the General Conditions.

III.10.5 III.11.5 If no agreement can be reached:

- o the VSP, when drawing up his pro-forma invoice for Month M, shall take account of the [penaltiesremuneration reductions](#) calculated by Elia;
- o the Parties shall continue their negotiations with a view to reaching an amiable arrangement and, after concluding their agreement, settle this invoice ex-post;
- o if no amiable arrangement is reached, the dispute settlement procedure set out in [Art. I.13](#) **Error! Reference source not found.** of the General Conditions shall apply.

III.10.6 III.11.6 ~~Annex 9~~ Annex 9 includes the appropriation structure to be used by the VSP.

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Specific Conditions

The Parties agree that this Contract is valid from its date of signature until DD/MM/YYYY

Drawn up in Brussels in two originals, of which each Party concerned acknowledges having received one. The official version has been drawn up in Dutch and French, without one version taking precedence over the other; the English version is solely for information purposes.

ELIA Transmission Belgium N.V./S.A., represented by:

[•]

[•]

[•]

[•]

Date:

Date:

[ServiceProvider], represented by:

[•]

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Date:

Date:

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Annexes

PART IV - ANNEXES

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Annex 1 List of controlling and/or non-controlling Technical Units

ANNEX 1. LIST OF CONTROLLING AND/OR NON-CONTROLLING TECHNICAL UNITS

Name: [VSP]

Version: [date submission VSP]

Validity Period: [start] – [end]

In accordance with Art. III.3.2 the VSP must declare the Technical Units on which he will make the Service available.

The Technical Units must be in respect with all the conditions set forth in Art. III.3.4.

This list must be presented by the VSP to Elia and must be agreed between both Parties.

Updates of this list must be exchanged, following the rules set forth in Art.III.3.7, and agreed upon via email to the contracting responsible as per Annex 10.

The fact of being listed in the present Annex does not constitute a right of access for the said Technical Units.

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Annex 1 List of controlling and/or non-controlling Technical Units

Technical Unit	Service Measurement Point EAN	Controlling (C) or Non-controlling (NC)	Technical control band in Injection Mode (MVAR)				Technical control band in Compensator Mode (MVAR)				Sensitivity Coefficient α_{eq}	Reference Setpoint (MVAR)	Minimum Active Power Threshold (MW) in Injection	Minimum Active Power Threshold (MW) in Offtake ⁵	Minimum Active Power Threshold (MW) in Compensator Mode ⁶	Maximum Active Power Threshold (MW) in Compensator Mode ⁵	Cost of start-up to Compensator Mode (if available) (€)	Maximum start-up time to Compensator Mode (if available) otherwise to Injection Mode (s)	Reactive Power ramp rate (MVAR/s)	Technical Unit equipped with Power Saving Mode (Y/N)	
			$Q_{\text{tec h min}}^3$	Q3	Q1	$Q_{\text{tec h max}}^4$	$Q_{\text{tech min}}^6$	Q3	Q1	$Q_{\text{tech max}}^4$											

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With:

- $Q_{\text{tech min}}$ (or $Q_{\text{tech-}}$): technical minimum that can be absorbed by the unit and defining the Technical Control Band
- Q3: Value expressed in % of the $Q_{\text{tech min}}$ used in order to split the Technical Control Band into two price bands following conditions described in annex 12
- Q1: Value expressed in % of the $Q_{\text{tech max}}$ used in order to split the Technical Control Band into two price bands following conditions described in annex 12
- $Q_{\text{tech max}}$ (or $Q_{\text{tech+}}$): technical maximum that can be produced by the unit and defining the Technical Control Band
- Reference Setpoint: set point: ~~set point in at~~ which, the Controlling Technical Unit is supposed to operate when Elia does not send a Setpoint to the VSP
- Reactive Power Ramping Rate: Rate of change of Reactive Power per second that a Controlling Technical Unit must respect when following a new Manual Setpoint (only applies to assets able to modulate their Reactive Power ramp rate)

⁵ Values corresponding to active power **offtake** must be written as **negative** values. Values corresponding to active power **injection** must be written as **positive** values.
⁶ Values corresponding to reactive power **absorption** must be written as **negative** values. Values corresponding to reactive power **injection** must be written as **positive** values.



ANNEX 2. CALCULATION OF REMUNERATION OF THE SERVICE

The calculation of the power that Elia requires from the VSP is the basis for the Service remuneration.

The remuneration for each quarter-hour is dependent on the Q_{req} value, and the price component applicable for the specific quarter hour as defined in Annex 12

$$Remuneration(Qh_n) = Q_{req_{\square}}(Qh_n) * \frac{1}{4} * Price(Qh_n)$$

Where:

- o $Q_{req}(Qh_n)$: the Reactive Power Requested that is remunerated for the quarter-hour n as computed in this annex
- o $Price(Qh_n)$: the price of Reactive Energy for quarter-hour n as determined per Annex 12
- o Qh_n : the considered quarter-hour

2.A CALCULATION OF Q_{REQ}

Q_{req} shall be calculated by the following formula:

- For Controlling Technical Units:
 - o During qh where no setpoint is received by the technical unit

$$Q_{req} = - \frac{(GV(t) - V_{startup}) * \alpha_{eq} * 0,45 * P_{tec_max}}{U_{norm_exp}} + Q_{initial} \quad (1)$$

- o During qh during which a setpoint is received by the technical unit

$$Q_{req} = Q_{req_manual} \quad (2)$$

- For Non-controlling Technical Units:

$$Q_{req} = Q_{req_manual}$$

Where:

- o $GV(t)$: the average value of the Grid Voltage measurement at the Service Measurement Point for the specific quarter-hour controlled;
- o $V_{startup}$: as defined below in the present Annex;
- o Q_{req_manual} : the last Setpoint value communicated by Elia as described in Annex 8.
- o $Q_{initial}$: the Reactive Power measured at the quarter-hour following the quarter-hour at which the Controlling Technical Unit started up for the last time (meaning the last moment in time where the Technical Unit's $P_{measured}$ started to exceed its Minimum Active Power Threshold in Injection, in Offtake or in Compensator Mode as agreed in Annex 1) or measured at the quarter-hour following the quarter-hour in which a manual Setpoint is requested.

Annex 2 Calculation of remuneration of the Service

- U_{norm_exp} : the standard operational Grid Voltage under which the Technical Unit is foreseen to operate, as agreed in the Technical Unit's Connection Contract or as agreed by Elia and the VSP in case the Technical Unit is not included in a Connection Contract with Elia;
- P_{tech_max} : a data that indicates the installed capacity (in MW) of a Technical Unit in line with articles 45 and 48 of the SOGL, as mentioned in the [OPAConnection](#) Contract or as agreed by Elia and the VSP in case the Technical Unit is not included in a [OPAConnection](#) Contract with Elia;

Automatic Control Service Type

The Automatic Control Service Type reaction of a certain Technical Unit is determined by the Grid Voltage and by the Technical Unit's capacity to react to it according to its relative Sensitivity Coefficient (α_{eq}). MVAR's requested are considered to be MVAR's that are produced or absorbed when the Grid Voltage deviates from $V_{startup}$ (as defined in the present Annex).

$V_{startup}$ is the average Grid Voltage value of the quarter hour following the quarter hour during which the unit started up for the last time (meaning the last moment in time where the Technical Unit's $P_{measured}$ started to exceed its Minimum Active Power Threshold in Injection, in Offtake or in Compensator Mode (P_{min} in [Figure 2](#)) as agreed in Annex 1). $V_{startup}$ is also reinitialized at the quarter-hour following the quarter-hour in which a manual Setpoint is requested using the Grid Voltage measured at this quarter-hour. $V_{startup}$, together with α_{eq} characterize the Technical Unit's droop curve.

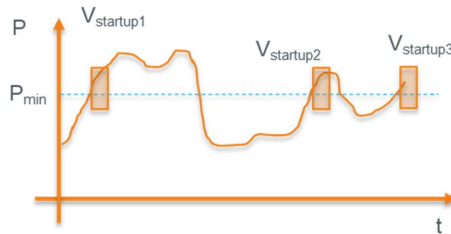


Figure 2: Example of calculation of $V_{startup}$ in function of the evolution of $P(t)$

To avoid propagations of errors when computing the Reactive Power Requested, $Q_{initial}$ and $V_{startup}$ are also initialized everyday at 00:00 for Technical Units whose Active Power injection or offtake is above the Minimum Active Power Threshold in Injection, in Offtake or in Compensator Mode at this time, using respectively the Reactive Power and the Grid Voltage measured during the first quarter-hour of each day.

Setpoint request – Manual Control Service Type

For the quarter-hour(s) during which Technical Unit is expected to ramp-up or ramp-down its production or [absorption](#) of Reactive Power for the Manual Control Service Type (as per requirements in Art. III.5) Q_{req} will correspond to the entire volume requested for this quarter-hour.

Case 1

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Annex 2 Calculation of remuneration of the Service

For a Setpoint request that arrives at the latest 10 minutes after the beginning of a given quarter-hour (at a $T_{request}$ **equal to or smaller than** start of the quarter-hour + $10 \cdot 60 = 600 \text{sec}$ within the quarter-hour), the Q_{req_q} for the quarter-hour during which the Setpoint is requested (Qh1 in the figure below) corresponds to

$$Q_{req_q}(Qh1) = Q_{req_manual}$$

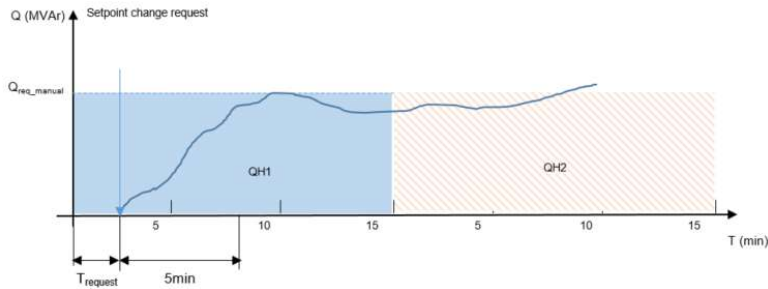


Figure 3: calculation of Q_{req_q} for a quarter hour during which a Setpoint request occurs before 10 minutes within the quarter-hour

Case 2

For a Setpoint request that arrives later than 10 minutes after the beginning of the quarter-hour (at a $T_{request}$ **larger than** start of the quarter-hour + $10 \cdot 60 = 600 \text{sec}$ within the quarter-hour), the Q_{req_re} for the quarter-hour during which the Setpoint is requested (Qh1) **and** the quarter-hour following the quarter-hour during which the Setpoint has been requested (Qh2) corresponds to

$$Q_{req_q}(Qh1) = Q_{req_q}(Qh2) = Q_{req_manual}$$

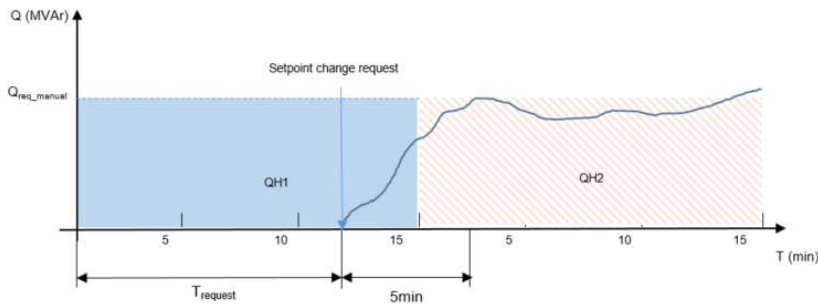
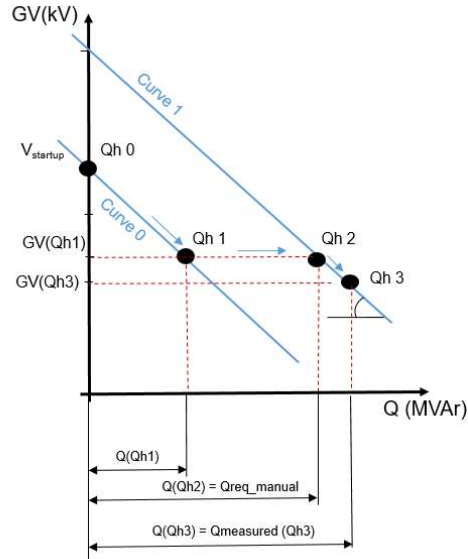


Figure 4: calculation of Q_{req_q} for 2 quarter hours during which a Setpoint request occurs after 10 minutes within the first quarter-hour

Remuneration principle for a Controlling Technical Unit

For a Controlling Technical Unit for 4 consecutive quarter-hours, remuneration for each quarter-hour would be as follows:

Annex 2 Calculation of remuneration of the Service



- **Qh 0** : Assuming the Technical Unit started injecting Active Power above its Minimum Active Power Threshold in Injection (as per Annex 1) during the previous quarter-hour, the measured Average Grid Voltage over Qh 0 is assumed to be $V_{startup}$ and the measured Reactive Power is assumed to be 0 MVar so that $Q_{initial}$ is set to 0 MVar .
- **Qh 1** : While delivering the Automatic Control Service according to curve 0, the Grid Voltage evolves to $GV(Qh1)$. $Q_{req}(Qh1)$ is calculated according to the α_{eq} , GV and $V_{startup}$ (using equation (1)) and is remunerated according to agreed-price (as per Annex 12). $Q_{initial} = 0$ since no Setpoint request from Elia was received during this quarter-hour.

In case the setpoint is reached according to the modalities described in Annex 8

- **Qh 2**: During Qh2 the Technical Unit has received a request for Setpoint and has reached this Setpoint during the QH2 according to modalities described in Annex 8. $Q_{req}(Qh2)$ is equal to Q_{req_manual} as per equation (2). The Technical Unit restarts the Automatic Control following the curve 1.
- **Qh 3**: To avoid the propagation of the error following a Setpoint request, $Q_{req}(Qh3)$ is calibrated using the measured Reactive Power and Grid Voltage of this quarter-hour i.e. $Q_{initial} = Q_{measured}(Qh3)$ and $V_{startup} = GV(Qh3)$.

$$Q_{req_c}(Qh3) = - \frac{(GV(Qh3) - V_{startup}) * \alpha_{eq} * 0,45 * P_{tech_max}}{U_{norm_exp}} + Q_{initial} = Q_{measured}(Qh3)$$

For the quarter hour following Qh3, in the case of no new Setpoints sent, the Q_{req} is going to be calculated according to the α_{eq} , GV, new $V_{startup}$ and $Q_{initial}$ (using equation (1)) as defined above and is remunerated according to agreed-price (as per Annex 12)

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Annex 2 Calculation of remuneration of the Service

In case the setpoint is not reached according to the modalities described in Annex 8

- o Qh 2: During Qh2 the Technical Unit has received a request for Setpoint and has not reached this Setpoint during the QH2 according to modalities described in Annex 8. $Q_{req}(Qh2)$ is not equal to Q_{req_manual} as per equation (2). The Technical Unit restarts the Automatic Control following the curve 1.
- o Qh 3: Given that the setpoint was not reached according to the modalities described in Annex 8, no calibration based on measured values is possible. This means that the $Q_{initial}$ and $V_{startup}$ will not be measured values, but based on the setpoint request and a linear interpolation. This means:

$$Q_{initial}(Qh3) = Q_{req_manual}(Qh2) + Q_{measured}(Qh3) - Q_{measured}(Qh2)$$

$$V_{startup}(Qh3) = GV(Qh2) + \left(\frac{V_{measured}(Qh3) - GV(Qh2)}{Q_{measured}(Qh3) - Q_{measured}(Qh2)} \right) * Q_{initial}(Qh3)$$

$$Q_{req_{\square}}(Qh3) = - \frac{(GV(Qh3) - V_{startup}) * \alpha_{eq} * 0,45 * P_{tech_max}}{U_{norm_exp}} + Q_{initial}$$

For the quarter hour following Qh3, in the case of no new Setpoints sent, the Q_{req} is going to be calculated according to the α_{eq} , GV, new $V_{startup}$ and $Q_{initial}$ (using equation (1)) as defined above and is remunerated according to price (as per Annex 12)

2.A.1 Example of calculation of the Reactive Power Requested for a Controlling Technical Unit

The table below shows an example of the computation of the Reactive Power Requested ($Q_{req_{\square}}$) for a Controlling Technical Unit assuming that:

- The Minimum Active Power Threshold in Injection is 100 MW
- The Sensitivity Coefficient is equal to: $\frac{\alpha_{eq} * 0,45 * P_{tech_max}}{U_{norm_exp}} = 27,33$

Date	-P _{measured} (MW)	Grid Voltage GV (kV)	Q _{initial} (MVar)	V _{startup} (kV)	Reactive Power measured (MVar)	Setpoint (MVar)	ΔV = Grid Voltage - V _{startup} (kV)	Q _{req_□} (MVar) = - ΔV*27,33 + Q _{initial}
09:30:00	90	/	/	/	/	/	/	/
09:45:00	110	/	/	/	/	/	/	0
10:00:00	150	410,401	0	410,401	0	/	0	0
10:15:00	150	409,652	0	410,401	21	/	-0,749	20,47017

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Annex 2 Calculation of remuneration of the Service

10:30:00	150	409,595	0	410,401	23	/	-0,806	22,02798
10:45:00	150	409,631	0	410,401	22	/	-0,77	21,0441
11:00:00	150	409,623	0	410,401	22	/	-0,778	21,26274
11:15:00	150	409,596	0	410,401	22	/	-0,805	22,00065
11:30:00	150	409,685	0	410,401	20	/	-0,716	19,56828
11:45:00	150	409,627	0	410,401	20	/	-0,774	21,15342
12:00:00	150	410,064	0	410,401	-80	-75	-0,337	-75
12:15:00	150	410,835	-70	410,835	-70	/	0	-70
12:30:00	150	410,688	-70	410,835	-66	/	-0,147	-65,98249
12:45:00	70	/	/	/	/	/	/	/

2.A.2 At 09:45, The Technical Unit's P_{measured} is above its Minimum Active Power Threshold in Injection and the Reactive Power Requested is 0 MVAR

2.A.3 At 10:00, a calibration is made using the measured Grid Voltage and measured Reactive Power. The initial Reactive Power (Q_{initial}) is equal to the measured Reactive Power for this quarter-hour (i.e. 0 MVAR in this example) and the initial Grid Voltage (V_{startup}) is equal to the measured Grid Voltage for this quarter-hour (i.e. 410.401 kV in this example) at the Service Measurement Point. By application of formula (1), the Reactive Power Requested for this quarter-hour is equal to the measured Reactive Power.

- From 10:15 to 11:45 included, the Reactive Power Requested is computed according to the formula (1) described in this annex and using the Q_{initial} , V_{startup} and Sensitivity Coefficient as defined above.
- At 12:00, a Setpoint of 75 MVAR (absorption) is requested by Elia. The Reactive Power Requested for this quarter-hour is then -75 MVAR.
- At 12:15, a calibration is made using the measured Grid Voltage and measured Reactive Power. Q_{initial} is equal to the measured Reactive Power for this quarter-hour and V_{startup} is equal to the measured Grid Voltage for this quarter-hour. By application of formula (1), the Reactive Power Requested for this quarter-hour is equal to the measured Reactive Power.
- At 12:30, the Reactive Power Requested is again computed based on formula (1) using the calibrated values of Q_{initial} and V_{startup}
- At 12:45, the Technical Unit is going to stop and injects less Active Power than its Minimum Active Power Threshold in Injection. The Service is then not delivered anymore.

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Annex 2 Calculation of remuneration of the Service

2.A.4 Example of calculation of the Reactive Power Requested for a Non-controlling Technical Unit

The table below shows an example of the computation of the Reactive Power Requested (Q_{req}) for a Non-Controlling Technical Unit. The Reactive Power Requested is equal to the last Setpoint value communicated by Elia as described in Annex 8.

Date	-P _{measured} (MW)	Setpoint (MVar)	Q _{req} (MVar) = Sepoint
10:15:00	150	0	0
10:30:00	150	20	20
10:45:00	150	20	20
11:00:00	150	20	20
11:15:00	150	40	40
11:30:00	150	40	40

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Annex 2 Calculation of remuneration of the Service

2.B DETERMINATION OF THE Price(Qh_n)

Depending on the Q_{req□} as computed in this annex, the price used for the remuneration is determined based on the price structure as per Annex 12.

For a Controlling Technical Unit In Injection Mode:

- If $0 < Q_{req□} < Q1$: price 1 is used for the remuneration
- If $Q1 \leq Q_{req□} \leq Q_{tech_max}$: price 1 is used for the remuneration of the Reactive Power volume till Q1 and price 2 is used for the remuneration of the Reactive Power volume from Q1 to Q_{req}
- If $Q3 < Q_{req□} < 0$: price 3 is used for the remuneration
- If $Q_{tech_min} \leq Q_{req□} \leq Q3$: price 3 is used for the remuneration of the Reactive Power volume till Q3 and price 4 is used for the remuneration of the Reactive Power volume from Q3 to Q_{req}

For a Controlling Technical Unit in Compensator Mode:

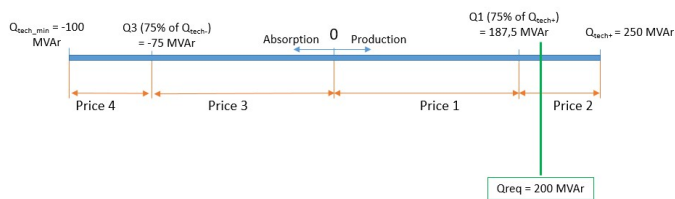
- If $0 < Q_{req□} < Q1$: price 5 is used for the remuneration
- If $Q1 \leq Q_{req□} \leq Q_{tech_max}$: price 5 is used for the remuneration of the Reactive Power volume till Q1 and price 6 is used for the remuneration of the Reactive Power volume from Q1 to Q_{req}
- If $Q3 < Q_{req□} < 0$: price 7 is used for the remuneration
- If $Q_{tech_min} \leq Q_{req□} \leq Q3$: price 7 is used for the remuneration of the Reactive Power volume till Q3 and price 8 is used for the remuneration of the Reactive Power volume from Q3 to Q_{req}

For a Non-Controlling Technical Unit :

- If $0 < Q_{req□} < Q_{tech_max}$: price 9 is used for the remuneration
- If $Q_{tech_min} \leq Q_{req□} < 0$: price 10 is used for the remuneration

Example for a Controlling Technical Unit in Injection Mode

Assuming the Technical Control Band and price band are defined in the following figure and the Q_{req□} is equal to 200 MVar:



The remuneration is:

$$Remuneration(Qh_n) = 187.5 * \frac{1}{4} * Price 1 + (200 - 187.5) * \frac{1}{4} * Price 2$$

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Annex 2 Calculation of remuneration of the Service

2.C DETERMINATION OF THE BRP PERIMETER CORRECTION

The energy requested of an asset started for the Service is determined as follows:

- For the first quarter-hour of the activation:

$$P_{energy\ requested} = \frac{1}{4} \times P_{req} \times \frac{15 - \Delta t}{15}$$

Where Δt is the duration in minutes between the start-up request and the beginning of the concerned quarter-hour and P_{req} is the average of the Minimum Active Power Threshold in Compensator Mode and of the Maximum Active Power Threshold in Compensator Mode if the Compensator Mode is available, otherwise if the Compensator Mode is not available, P_{req} is the Minimum Active Power Threshold in Offtake..

- For the second quarter-hour of the activation:

$$P_{energy\ requested} = \frac{1}{4} \times P_{req}$$

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Annex 3 Delivery control of the Automatic Control Service Type

ANNEX 3. DELIVERY CONTROL OF THE AUTOMATIC CONTROL SERVICE TYPE

Elia expects that the VSP's Reactive Power production or absorption, at the Service Measurement Point as defined in Annex 13, remains within the calculated tolerance band around the value of Q_{req} as defined in the formula below. If this is not the case, Elia will apply [penalties/remuneration reduction](#) as per Art. 1.1

$$Q_{req} = - \frac{\alpha_{eq} * (GV(t) - V_{startup}) * 0,45 * P_{tech,max}}{U_{norm,expt}} + Q_{initial}$$

Where

- α_{eq} is the Technical Unit sensitivity coefficient
- $GV(t)$ is the 15-minute measurements of the Grid Voltage
- $V_{startup}$ is the average Grid Voltage value of the quarter-hour following the quarter hour during which the unit started up. When the active power of the Technical Unit drops under the Minimum Active Power Threshold either in Injection Mode or Compensator Mode, $V_{startup}$ will be memorised for the next 15 minutes. This $V_{startup}$ value will therefore apply again if the Technical Unit active power falls within the Minimum and Maximum Active Power Thresholds of another mode (Compensator Mode or Injection Mode).
- $P_{tech,max}$ is the maximum technical power
- $U_{norm,expt}$ is the standard operational Grid Voltage under which the Technical Unit is foreseen to operate, as agreed in the Technical Unit's Connection Contract
- $Q_{initial}$ is the Reactive Power measured at the quarter-hour following the quarter-hour at which the Controlling Technical Unit started up for the last time (meaning the last moment in time where the Technical Unit's $P_{measured}$ started to exceed its Minimum Active Power Threshold in Injection, in Offtake or in Compensator Mode as agreed in Annex 1) or measured at the quarter-hour following the quarter-hour in which a manual Setpoint is requested.

Elia tolerates a deviation in the delivery of the Service for each quarter-hour. This tolerance is calculated as follows:

$$Tolerance = 7.5\% * Q_{tech,max}$$

With a:

- minimum value of 1 MVAR
- maximum value of 25 MVAR

This error margin is considered equally on the upper or lower margins of the additional Reactive Power value that should have been supplied by the Technical Unit. Two values are defined around Q_{req} :

- Limit inf. = $Q_{req} - Tolerance$
- Limit sup = $Q_{req} + Tolerance$

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Annex 3 Delivery control of the Automatic Control Service Type

The delivery control consists in checking if the Reactive Power supplied at the Service Measurement Point is within the tolerance band defined by Limit inf. and Limit sup.

Example of activation control for a certain Technical Unit

Considering a unit with the following characteristics:

- it is connected to the 150kV network ($U_{norm\ expi}$);
- it can supply a volume of Reactive Power in the band [$Q_{tech\ min} = -48$; $Q_{tech\ max} = 96,77$] MVAR;
- it has a maximum technical power ($P_{tech\ max}$) of 150 MW and minimum Active Power (P_{min}) of 100 MW;
- it has a Sensitivity Coefficient α_{eq} of 18
- the standard operational Grid Voltage under which the Technical Unit is foreseen to operate ($U_{norm\ expi}$) is 150 kV
- the average Grid Voltage value of the quarter hour during which the unit started up for the last timetime $V_{startup} = 158.8$ kV

For this example, the 15-minute measurements of the Grid Voltage (GV(t)) and metering data of the Reactive Power (Q_{meas}) for 3 september 2019 are checked from 13:45 to 18:30.

Q_{req} is then calculated using the formula above.

The margin of tolerance defined in the present Annex corresponds to $0,075 * 96,77 = 7,25$ MVAR and it is distributed around Q_{req} defining:

- Limit inf. = $Q_{req} - 7.25$ MVAR
- Limit sup = $Q_{req} + 7.25$ MVAR

Date	Hour	$P_{measured}$ [MW]	P_{min} [MW]	GV = U_{meas} [kV]	Q_{meas} [MVAR]	Q_{req} [MVAR]	Limit inf. [MVAR]	Limit sup. [MVAR]	Succeeded?
03/09/2019	13:45	150	100	158,4	14,36	3,37	- 3,88	10,62	N
03/09/2019	14:00	150	100	158,1	12,56	5,42	-1,83	12,67	Y
03/09/2019	14:15	150	100	158,3	10,63	3,87	-3,38	11,12	Y
03/09/2019	14:30	150	100	158,3	11,2	4,35	-2,9	11,6	Y
03/09/2019	14:45	150	100	158,5	13,06	2,43	-4,82	9,68	N
03/09/2019	15:00	150	100	158,3	14,99	3,76	-3,49	11,01	N
03/09/2019	15:15	150	100	158,3	15,53	4,01	-3,24	11,26	N
03/09/2019	15:30	150	100	158,5	14,26	2,76	-4,49	10,01	N
03/09/2019	15:45	150	100	158,5	8,73	2,26	-4,99	9,51	Y
03/09/2019	16:00	150	100	158,7	7,83	0,95	-6,3	8,2	Y
03/09/2019	16:15	150	100	158,2	8,76	5,05	-2,2	12,3	Y

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Annex 3 Delivery control of the Automatic Control Service Type

Date	Hour	P _{measured} [MW]	P _{min} [MW]	GV = U _{meas} [kV]	Q _{meas} [MVar]	Q _{req} [MVar]	Limit inf. [MVar]	Limit sup. [MVar]	Succeeded?
03/09/2019	16:30	150	100	158,1	9,03	5,72	-1,53	12,97	Y
03/09/2019	16:45	150	100	158,1	14,21	5,53	-1,72	12,78	N
03/09/2019	17:00	150	100	158,3	15,26	4,48	-2,77	11,73	N
03/09/2019	17:15	150	100	158,1	11,69	5,43	-1,82	12,68	Y
03/09/2019	17:30	150	100	158	11,3	6,73	-0,52	13,98	Y
03/09/2019	17:45	150	100	157,8	13,39	8,38	1,13	15,63	Y
03/09/2019	18:00	150	100	157,7	16	9,17	1,92	16,42	Y
03/09/2019	18:15	150	100	157,6	16,8	9,94	2,69	17,19	Y
03/09/2019	18:30	150	100	156,8	24,9	16,72	9,47	23,97	N

For the sake of clarity, the values illustrated in the table above are represented :

- in blue for the measured/metered values
- in green for the computed values
- in black for the fixed values

Elia deems that the Service has not been supplied for any quarter-hour during which the metered Reactive Power Q_{meas} is not within calculated lower and upper limits (Limit inf and Limit sup). ~~These quarter-hours are considered as failed.~~

~~In this example, this is the case for 8 out of 20 quarter hours, i.e. 40% of the time.~~

~~This sample is representative of one of the 6 samples that are considered per Technical Unit per month. Based on the six samples of one month, Elia applies a remuneration reduction as described in Annex 6.~~

In order to avoid a double penalization related to the tariff for the offtake or injection of additional reactive energy and the delivery control of the Automatic Control Service Type, quarter-hours for which a Reactive Power volume has already been penalized through the tariff for the offtake or injection of additional reactive energy will not be considered in the delivery control of the Service.

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ANNEX 4. DELIVERY CONTROL OF THE MANUAL CONTROL SERVICE TYPE

Following the request of a Setpoint, Elia expects that the VSP adapts his Reactive Power production or absorption to reach the value of Q_{req} within the requested timeframe to respond to Elia's request as defined in Art. III.5.4.

$$Q_{req} = Q_{req_manual}$$

With Q_{req_manual} being the last Setpoint value communicated by Elia as described in Annex 8.

Elia tolerates a deviation in the delivery of the Service for each requested Setpoint. This tolerance is calculated as follows:

$$Tolerance = 7.5\% * Q_{tech,max}$$

With a :

- minimum value of 1 MVar
- maximum value of 25 MVar

This error margin is considered equally on the upper or lower margins of the additional Reactive Power value that should have been supplied by the Technical Unit. Two values are defined around Q_{req} :

- Limit inf. = $Q_{req} - Tolerance$
- Limit sup = $Q_{req} + Tolerance$

The delivery control of the Manual Control Service Type consists in checking whether the Reactive Power supplied at the Service Measurement Point is within the tolerance band defined by Limit inf. and Limit sup. for at least two successive 30" Reactive Power measurements within the requested timeframe as defined in art. III.5.4.

In addition, starting from the quarter hour the setpoint request was achieved or in the quarter hour the maximum duration as defined in Art. III.5.4 was reached, the delivery control as defined in Annex 3 will be applied. The Qreq in that case will be equal to the setpoint request.

Example of verification for a certain Technical Unit:

Elia sends an activation request at 8 a.m. (production of Reactive Power) to Technical Unit X with the Setpoint "150 MVar" (the procedures for the communication of a Setpoint are described in Annex 8). In this case $Q_{req} = 150MVAR$

To verify whether the Reactive Power Requested was supplied (Q_{req}), Elia uses the remote 30" Reactive Power measurements available for the 5 minutes following the activation request, i.e.:

Time	$Q_{meas}(MVar)$
8:00:00	81.76
8:00:30	75.84
8:01:00	77.42
8:01:30	82.55
8:02:00	61.22
8:02:30	59.25

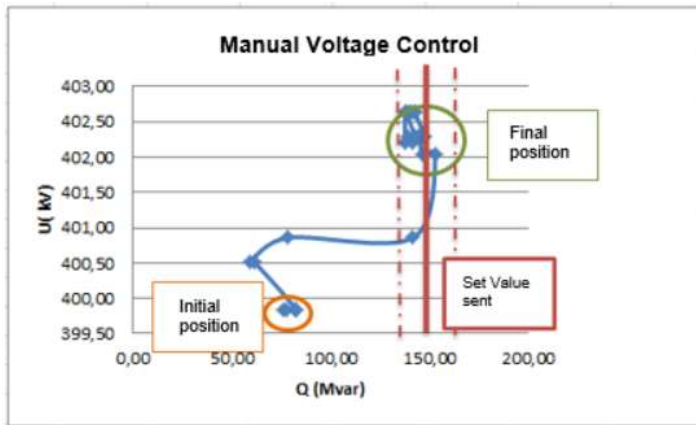
Annex 4 Delivery control of the Manual Control Service Type

8:03:00	78.21
8:03:30	141.41
8:04:00	152.86
8:04:30	146.15
8:05:00	145.36

Elia checks whether the volume of the Q_{req} (150 MVar) and measured at the Service Measurement Point is within the limits of the tolerance calculated in the present Annex, for at least two successive measurements. Considering a Technical Unit with $Q_{tech,max} = 200$ MVar, the Tolerance equals to 15 MVar.

That is the case in this example as of the measurement at 8:03:30 (i.e. 3 minutes and 30 seconds after 8 a.m.). The VSP has responded correctly to Elia's activation request (see also graphic example hereunder). Indeed the Reactive Power measured is within the tolerance for a least two successive measurements (8:03:30 and 8:04:00).

In order to avoid a double penalization related to the tariff for the offtake or injection of additional reactive energy and the delivery control of the Manual Control Service Type, quarter-hours for which a Reactive Power volume has already been penalized through the tariff for the offtake or injection of additional reactive energy will not be considered in the delivery control of the Service.





ANNEX 5. EXAMPLE OF CALCULATION OF RELATIVE SENSITIVITY COEFFICIENT OF TECHNICAL UNITS (ALPHA_{EQ})

Disclaimer: In the present Annex is presented an example of the calculation of the relative Sensitivity Coefficient (α_{eq}) value for informative reasons. It is to be noted that this value is a structural information for the Technical Unit's capability to regulate voltage and Reactive Power and its provision is foreseen by the Federal Grid Code. In case a Technical Unit provides the Automatic Control Service Type, the relative Sensitivity Coefficient is determined by Elia after discussions between Elia and the Elia Grid User. For each Technical Unit delivering the Automatic Control Service Type this value is annotated in Annex 1.

The reaction of a certain Technical Unit to voltage changes at its Service Measurement Point corresponds to the following equation (which is also a characteristic of the Technical Unit's droop curve):

$$\alpha_{eq} = - \frac{\frac{\Delta Q}{0,45 \times P_{nom}}}{\frac{\Delta GV}{U_{norm_expt}}}$$

- ΔGV : the difference between the Grid Voltage before and after the network voltage variation;
- ΔQ : the absolute difference between the Reactive Power measured at Q_{h_n} and the Reactive Power Measured at $Q_{h_{(n-1)}}$. This volume corresponds to the additional Reactive Power that must be supplied by a Technical Unit during the 15-minute interval considered after a variation of the measured voltage (ΔGV) on this same 15-minute interval, calculated by applying the formula above.
- U_{norm_expt} : The standard operational Grid Voltage under which the Technical Unit is foreseen to operate, as agreed in the Technical Unit's Connection Contract.
- Q_{h_n} : the considered quarter-hour

Elia has 15-minute metering data and measurements of the Reactive Power and measurements of the voltage at the Service Measurement Point of the Technical Unit. The quarter-hourly metering, following a request for Setpoint from Elia, are not considered in a valid sample.

A time interval is chosen for which the measurement of the Grid Voltage and of the net Active and Reactive Power of the Technical Unit concerned is available, but not necessarily on the site of the Technical Unit. The choice of time interval must meet the following criteria:

- There are no radical variations in the frequency of the system and the net Active Power of the Technical Unit during the time interval, and the Setpoint is not changed.
- No radical variations of the Grid Voltage and the net production or absorption of Reactive Power of the Technical Unit occur during the first 20 seconds and last 20 seconds of the interval.
- There is no major variation in Grid Voltage and thus in the net production or absorption of Reactive Power of the Technical Unit during the rest of the interval.



Calculation of ΔQ and ΔGV

ΔGV is calculated by the following formula:

$$\Delta GV_{\square} = GV_2 - GV_1$$

Where:

- GV_1 : average Grid Voltage during the first 20 seconds of the interval
- GV_2 : average Grid Voltage during the last 20 seconds of the interval

ΔQ is calculated by the following formula:

$$\Delta Q = Q_2 - Q_1$$

Where:

- Q_1 : average Reactive Power production or absorption of the Technical Unit during the first 20 seconds of the interval
- Q_2 : average Reactive Power production or absorption of the Technical Unit during the last 20 seconds of the interval



ANNEX 6. PENALTY REMUNERATION REDUCTION FOR NON-DELIVERY OF THE AUTOMATIC CONTROL SERVICE TYPE

When the VSP fails to activate the Service (as established from the delivery control procedure described in Annex 3), Elia will apply a reduction of the monthly remuneration.

The remuneration reduction shall be proportional to the Discrepancy, which equals for every quarter hour the difference between the requested Reactive Power, the measured Reactive Power and including the tolerance defined in Annex 3:

$$Discrepancy = |Q_{requested} - Q_{measured}| - tolerance$$

The remuneration reduction calculation depends on the discrepancy sign.

Remuneration reduction for underdelivery ($|Q_{measured}| < |Q_{requested}|$)

$$Remuneration\ reduction = |Discrepancy * 1.5 * priceLastMVARsupplied|$$

$$Total\ remuneration\ reduction = \sum_{month} |Discrepancy * 1.5 * priceLastMVARsupplied|$$

Remuneration reduction for overdelivery ($|Q_{measured}| > |Q_{requested}|$)

$$Remuneration\ reduction = |Discrepancy * 0.5 * priceLastMVARsupplied|$$

$$Total\ remuneration\ reduction = \sum_{month} |Discrepancy * 0.5 * priceLastMVARsupplied|$$

Elia shall deem the Automatic Control Service Type to have not been supplied for a given 15-minute interval when the variation in Reactive Power measured for a certain Service Measurement Point does not fall within the margin of error defined in Annex 3.

Field Code Changed

If the conditions for the supply of the Automatic Control Service Type are not satisfied, Elia will calculate reductions to be applied to each monthly remuneration based on the following rule:

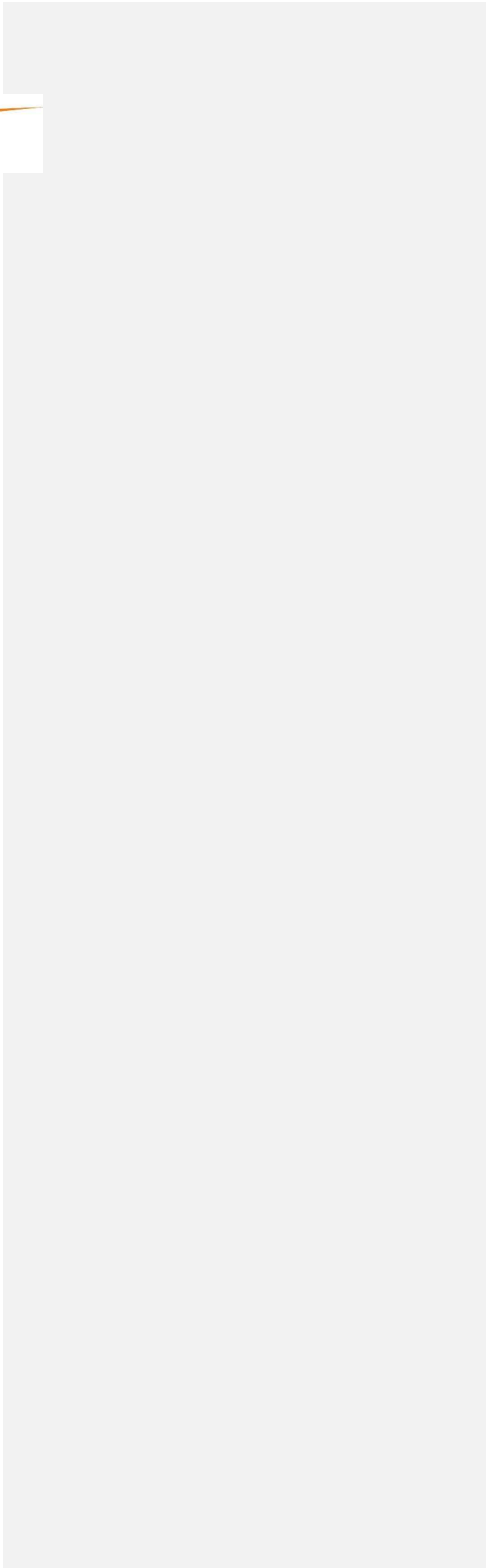
$$\%Q_{failed} = \frac{\# QHs\ not\ compliant\ with\ the\ supply\ conditions\ in\ the\ monthly\ samples}{\# QHs\ analysed\ in\ the\ monthly\ samples}$$

Where $\%Q_{failed}$ is between 0 and 30% included, Elia shall not apply the remuneration reduction.

Remuneration reduction

- ~~○ Where $\%Q_{failed}$ is above 30% and below or equal to 80%, a 25% reduction shall be applied to the remuneration for the Service for this Technical Unit as set in Art. II.8.3, for the entire month as of which the sample was constituted.~~
- ~~○ Where the $\%Q_{failed}$ is above 80% and below or equal to 100%, Elia shall deem that the Service has not been supplied and shall therefore not remunerate the VSP for the Technical Unit concerned, for the entire month as of which the sample was constituted.~~

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Annex 7 Penalty for non-delivery of the Manual Control Service Type

ANNEX 7. PENALTY FOR NON-DELIVERY OF THE MANUAL CONTROL SERVICE TYPE

When the VSP fails to activate the Service (as established from the delivery control procedure described in Annex 4), Elia will apply a reduction of the monthly remuneration.

The penalty remuneration reduction shall be proportional to the missing volume (Q_{manual_missing}) i.e. Discrepancy, which equals for every quarter hour the difference between the requested Reactive Power volume that has not been provided during the activation of Manual Control Service Type according to the following formula:

$$\begin{aligned} \text{Remuneration reduction} &= Q_{\text{manual_missing}} * \text{price of the last MVAR supplied} * 1,5 \\ & * \text{Average Setpoint duration} \end{aligned}$$

Where:

- the Average Setpoint duration is set to 10 hours

The price of the last MVAR supplied is based on the price structure as measured Reactive Power and including the tolerance defined in Annex 12 Annex 3:

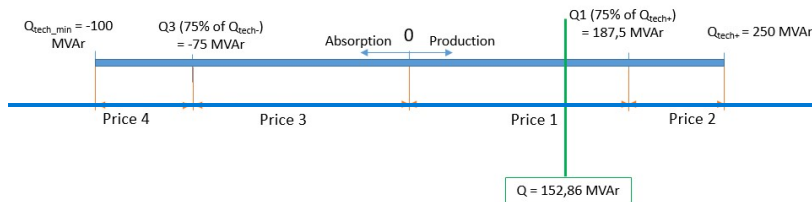
Example:

For instance, if the Setpoint requested by Elia for the example used in Annex 4 had been 200 MVAR, Elia would have noted in its measurements that the maximum value attained by the Technical Unit is 152,86 MVAR.

A penalty for the volume not supplied would then be imposed on the delta, i.e.

$$Q_{\text{manual_missing}} = 200 - 152,86 = 47,14 \text{ MVAR}$$

Assuming that the Technical Control Band and the corresponding price band of the Technical Unit are represented on the figure below, the price of the last MVAR supplied will correspond to the Price 1.



$$\text{Discrepancy} = |Q_{\text{requested}} - Q_{\text{measured}}| - \text{tolerance}$$

The remuneration reduction will be: calculation depends on the underdelivery or overdelivery of Reactive Power.

$$\text{Remuneration reduction} = 47,14 * \text{Price 1} * 1,5 * 10$$

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Annex 7 Penalty for non-delivery of the Manual Control Service Type

~~If the VSP fails to confirm reception of the activation message, Q_{manual_missing} is considered to be equal to the entire value of the Setpoint request (i.e. in the above example, Q_{manual_missing}=200MVar).~~
Remuneration reduction for underdelivery ($|Q_{measured}| < |Q_{requested}|$)

$$\begin{aligned} \text{Remuneration reduction} &= |\text{Discrepancy} * 1.5 * \text{priceLastMVarSupplied}| \\ \text{Total remuneration reduction} &= \sum_{\text{mont}} |\text{Discrepancy} * 1.5 * \text{priceLastMVarSupplied}| \end{aligned}$$

Remuneration reduction for overdelivery ($|Q_{measured}| > |Q_{requested}|$)

$$\begin{aligned} \text{Remuneration reduction} &= |\text{Discrepancy} * 0.5 * \text{priceLastMVarSupplied}| \\ \text{Total remuneration reduction} &= \sum_{\text{month}} |\text{Discrepancy} * 0.5 * \text{priceLastMVarSupplied}| \end{aligned}$$

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ANNEX 8. COMMUNICATION OF A SETPOINT BY ELIA FOR MANUAL CONTROL SERVICE

When receiving a Setpoint request from Elia pursuant to Art. III.5.4 and III.5.5, the VSP of a Technical Unit needs to follow a procedure to correctly perform the Manual Control Service. The procedure is described in this annex for both Controlling and Non-Controlling Technical Units.

8.A CONTROLLING TECHNICAL UNIT

When receiving a Setpoint, the VSP of a Controlling Technical Unit needs to follow three steps:

1) Receiving the Setpoint

When Elia identifies a need of Reactive Power to be produced or absorbed by a Technical Unit, Elia sends a Setpoint to the VSP of this Technical Unit that corresponds to the new value of the Reactive Power that has to be produced or absorbed by the Technical Unit (Q_{req_manual}) at the Service Measurement Point. The VSP needs to be able to receive and integrate this Setpoint according to the modalities defined in Art ~~III.5.4~~III.5.4 and ~~III.5.5~~III.5.5.

2) Reaching the Setpoint

Within the timeframe indicated in Art. ~~II.5.4~~II.5.4 after the Setpoint request, the VSP of the Technical Unit has to stop its Automatic Control, reach the requested Setpoint and maintain the Reactive Power in the tolerance band in accordance with modalities described in Annex 4.

3) Restarting the Automatic Control

When the Setpoint request is supposed to be correctly executed in accordance with modalities described in Annex 4, the Automatic Control has to be restarted.

An example of the communication of a Setpoint by Elia to a VSP is shown on the figure hereunder. This example describes the three steps of the communication of a Setpoint for a Controlling Technical Unit

Annex 8 Communication of a Setpoint by Elia for Manual Control Service

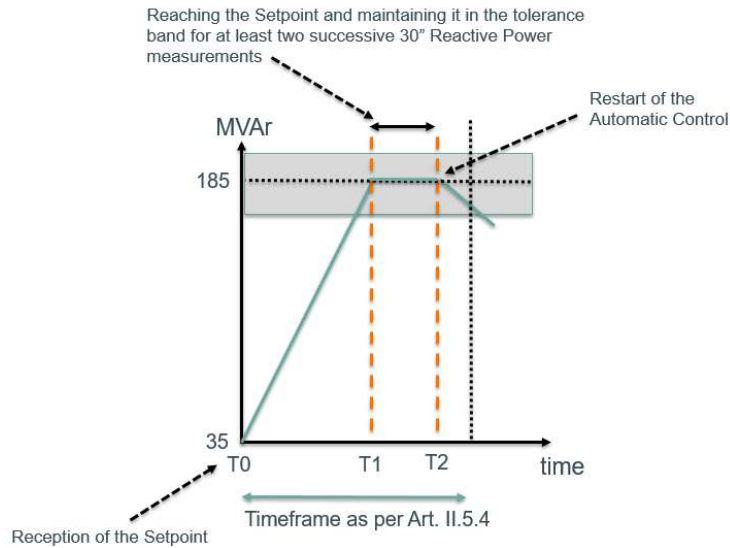


Figure 5: Example of a Setpoint request by Elia for a Controlling Technical Unit

Reception of the Setpoint

At T0, Elia identifies a need for additional Reactive Power to be produced by the Controlling Technical Unit and sends the new Setpoint "185 MVar" to the VSP as per Article III.5.4.

Reaching the Setpoint

Within the timeframe indicated in Art. III.5.4 after the Setpoint request, the VSP needs to stop its Automatic Control, reach the requested Setpoint (185 MVar) and maintain the Reactive Power in the tolerance band (grey band on Figure 5) in accordance with modalities described in Annex 4. Figure 5 shows that the requested Setpoint is reached at T1 and the Reactive Power is then correctly maintained in the tolerance band until T2.

Restart of the Automatic Control

At T2, the Setpoint request is correctly executed and the Automatic Control has to be restarted from that point.

8.B NON-CONTROLLING TECHNICAL UNIT

When receiving a Setpoint, the VSP of a Non-controlling Technical Unit needs to follow three steps:

- 1) Receiving the Setpoint

When Elia identifies a need of Reactive Power to be produced or absorbed by a Technical Unit, Elia sends a Setpoint to the VSP of this Technical Unit that corresponds to the new value of the Reactive Power that has to be produced or absorbed by the Technical Unit

Annex 8 Communication of a Setpoint by Elia for Manual Control Service

(Q_{req_manual}) at the Service Measurement Point. The VSP needs to be able to receive and integrate this Setpoint according to the modalities defined in Art. III.5.4 and III.5.5.

2) Reaching the Setpoint

Within the timeframe indicated in Art. III.5.4 after the Setpoint request, the VSP of the Technical Unit has to reach the requested Setpoint and maintain the Reactive Power in the tolerance band in accordance with modalities described in Annex 4.

3) Maintaining the Setpoint

The Setpoint has to be maintained in the tolerance band by the VSP until a new Setpoint is requested by Elia or the Active Power of the Technical Unit becomes lower than its Minimum Active Power Threshold in Injection, in Offtake or in Compensator Mode.

An example of the communication of a Setpoint by Elia to a VSP is shown on the figure hereunder. This example describes the three steps of the communication of a Setpoint for a Non-controlling Technical Unit.

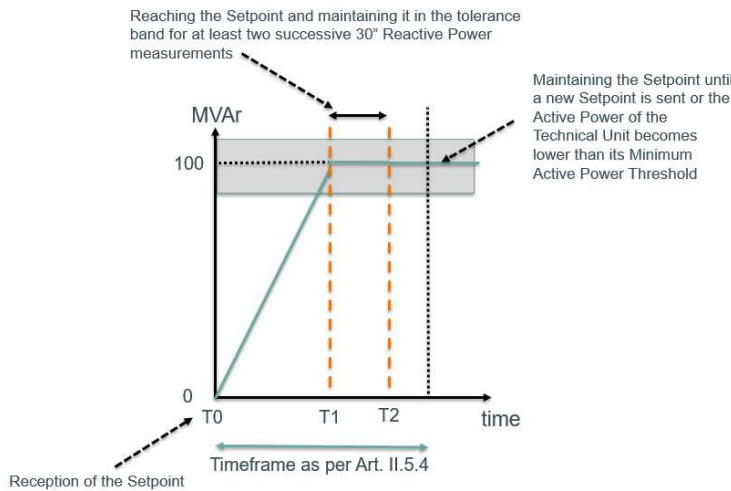


Figure 6: Example of a Setpoint request by Elia for a Non Controlling Technical Unit

Reception of the Setpoint

At T_0 , Elia identifies a need for additional Reactive Power to be produced by the Non-controlling Technical Unit and sends the Setpoint “100 MVar” to the VSP as per Article III.5.4.

Reaching the Setpoint

Within the timeframe indicated in Art. III.5.4 after the Setpoint request, the VSP needs to reach the requested Setpoint (100 MVar) and maintain the Reactive Power in the tolerance band (grey band on Figure 6) in accordance with modalities described in Annex 4. Figure 6 shows that the requested Setpoint is reached at T_1 and the Reactive Power is then correctly maintained in the tolerance band until T_2 .

Maintaining the Setpoint

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[ContractReference]
[ServiceProvider]

Signature Elia:

Signature [VSP]:



Annex 8 Communication of a Setpoint by Elia for Manual Control Service

From T2, the Setpoint has to be maintained in the tolerance band by the VSP until a new Setpoint is requested by Elia or the Active Power of the Technical Unit becomes lower than its Minimum Active Power Threshold in Injection, in Offtake or in Compensator Mode.

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[ServiceProvider]

Signature Elia:

Signature [VSP]:



Annex 9 Appropriation structure

ANNEX 9. APPROPRIATION STRUCTURE

Ancillary service	Remuneration	Booking reference
Voltage regulation	Automatic Control Service Type delivery control	910339
	Manual Control Service Type delivery control	910360
	MVAr Prod-normal mode (0-Q1 band)	910329
	MVAr Prod-normal mode (Q1-Qtech_max band)	910330
	MVAr Abs-normal mode (0-Q3 band)	910331
	MVAr Abs-normal mode (Q3-Qtech_min band)	910332
	MVAr Prod-compensator mode (0-Q1 band)	910333
	MVAr Prod-compensator mode (Q1-Qtech_max band)	910334
	MVAr Abs-compensator mode (0-Q3 band)	910335
	MVAr Abs-compensator mode (Q3-Qtech_min band)	910336
	MVAr Prod- non-regulating unit (all band)	910337
	MVAr Abs- non-regulating unit (all band)	910338
	Voltage regulation start-up	905503

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Signature Elia:

Signature [VSP]:



ANNEX 10. CONTACT PERSONSDETAILS

10.A ELIA

1 Contract monitoring



[Boulevard de l'Empereur 20](#)

[1000 Bruxelles](#)

[Tel.: +32 \(0\)2 546 7443](#)

[Fax: +32 \(0\)2 546 7840](#)

[Email: \[•\]](#)

2 Invoicing and payments

Settlement



[Boulevard de l'Empereur 20](#)

[1000 Brussels](#)

[Tel.: +32 \(0\)2 546 7062](#)

[Email: system.services@elia.be](#)

Invoicing and payments

[ELIA TRANSMISSION BELGIUM NV](#)



[Boulevard de l'Empereur 20](#)

[1000 Brussels](#)

3 Real-time operations

National dispatching (Operations)

[Chaussée de Vilvoorde 126](#)

[B-1000 Brussels](#)

[Tel.: +32 \(0\)2 382 2383](#)

[Fax: +32 \(0\)2 382 2139](#)

[Email: dispatching@elia.be](#)

Northern regional dispatching office (Noord)



Annex 10 Contact personsDetails

Southern regional dispatching office (Zuid)
<u>4 Non real-time operations</u> National dispatching (Duty) Chaussée de Vilvoorde 126 B-1000 Brussels Tel.: +32 (0)2 382 2308 Fax: +32 (0)2 382 2139 Email: dispatching@elia.be
<u>5 Analysis and preparation of tests</u> [•] Vilvoordselaan, 126 1000 Brussels Tel.: +32 (0)2 240 53 69 Email: [•]

10.B VOLTAGE SERVICE PROVIDER

<u>1 Contract monitoring</u>
<u>2 Invoicing and payments</u> Settlement Invoicing and payments
<u>3 Real time (24h/24h)</u>
<u>4 Non real-time operations</u>

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Signature Elia:

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ANNEX 11. ELIA GRID USER DECLARATION

Elia Transmission Belgium NV

To the attention of :

Keizerslaan 20

1000 Brussels

[Date DD/MM/YYYY]

Subject: Designation of a VSP by the Elia Grid User

	Elia Grid User	VSP
Name		
Address		

The Elia Grid User declares that:

- He designates [VSP] as VSP for the delivery period of [DD/MM/20222027] to 31/12/20222028 to VSP located at [ADDRESS].
- He is aware of the content of the concerned contract to be concluded by Elia and VSP.
- He will not take other commitments with respect to, nor be in charge of the above mentioned contract between Elia and VSP regarding the delivery of the Voltage and Reactive Power Control Service (hereinafter "the Service"), without prejudice to what is stated in the last paragraphs of this Declaration.

The Elia Grid User recognizes and agrees that the contract between Elia and VSP for the delivery of the Service is without prejudice to its rights and obligations regarding any other contract signed between Elia and the Elia Grid User or a third party related to the Technical Units, such as (but not limited to) a connection contract, access contract, OPA contract, SA contract or contract for restoration or balancing services.

The Technical Units covered by this agreement are the following:

Technical Unit	EAN

The Elia Grid User and the VSP recognize that Elia is not accountable for:

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Signature Elia:

Signature [VSP]:



Annex 11 Elia Grid User Declaration

- A disagreement between the Elia Grid User and the VSP regarding the production of energy and the delivery of the service voltage and Reactive Power control.
- A disagreement between the Elia Grid User and the VSP related to [penalties remuneration reductions](#), as provided in the contract for the Service.
- A disagreement between the Elia Grid User and the VSP in regards to tariffication of Reactive Power related to provision of the Service.

The VSP declares that he will inform the Elia Grid User and the Access Contract Holder in case of any modification regarding the delivery of the Service. The present agreement between the Elia Grid User and the VSP is terminated in case the Elia Grid User notifies the VSP and Elia either of the designation by him of a new third party as VSP for the above mentioned Technical Unit(s) for the remaining term of the delivering period and upon signature by this new third party of a contract regarding the delivery of the Service with Elia, or of his willingness to act as the VSP himself for the above mentioned Technical Unit(s) for the remaining term of the delivering period. In the latter case the Elia Grid User recognizes and agrees to take over the rights and obligations of the contract regarding the delivery of the Service from the VSP.

If the present agreement between the Elia Grid User and the VSP is terminated for any other reason, including following a termination by the VSP of the contract with Elia in accordance to [Art. 1.10.1, Error! Reference source not found.](#), or if a certain Technical Unit is deleted from the above list, and if the Elia Grid User is obliged to provide the Service, the Elia Grid User recognizes and agrees to take over the rights and obligations of the contract regarding the delivery of the Service from the VSP for the concerned Technical Unit(s) until he would appoint a new third party as VSP.

The Elia Grid User, represented by:

Name:

Function:

Date:

The VSP, represented by:

Name:

Function:

Date:

[For reception:](#)

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[ServiceProvider]

Signature Elia:

Signature [VSP]:



Annex 11 Elia Grid User Declaration

[Elia Transmission Belgium \(Elia\), represented by:](#)

Name: _____ Name: _____

Function: _____ Function: _____

Date: DD/MM/YYYY Date: DD/MM/YYYY

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[ServiceProvider]

Signature Elia:

Signature [VSP]:

ANNEX 12. REMUNERATION FOR ACTIVATION

12.A PRICE STRUCTURE

The price (expressed in €/MVAh) for the Service is set according to:

- o The Technical Control Band within which the Technical Unit is producing or absorbing MVARs at the specific moment of the activation;
- o The ability of the Technical Unit to operate in Injection Mode and/or in Compensator Mode;
- o Whether the Technical Unit is Controlling or Non-controlling;

The Parties have identified the following options:

- a) Technical Units that can supply Reactive Power in Injection Mode when they:
 - i. inject Active Energy beyond the Minimum Active Power Threshold in Injection during a certain 15-minute period ($\% P_{\text{tech_max}} \times 15$ minutes; specified for each Technical Unit in Annex 1) ; and/or
 - ii. perform offtakes of Active Energy beyond the Minimum Active Power Threshold in Offtake for reasons other than the supply of Reactive Power (e.g. a hydraulic Technical Unit in pump mode for storage reasons)
- b) Technical Units that can supply Reactive Power in Compensator Mode and respond to a request from Elia to activate Reactive Power by offtaking a small quantity of Active Energy between the Minimum Active Power Threshold in Compensator Mode and the Maximum Active Power Threshold in Compensator Mode (specified for each Technical Unit capable of supplying this service in Annex 1);

The following figures illustrate the possible options (with related thresholds and operation modes) for different types of Technical Units.

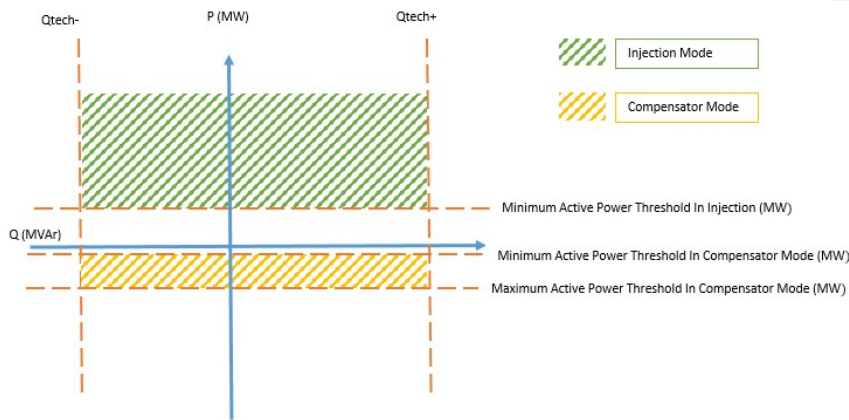


Figure 7: Technical Unit able to provide the Service in Injection Mode while injecting Active Energy (option a(i)) only and able to provide the Service in Compensator Mode (option b)

Annex 12 Remuneration for Activation

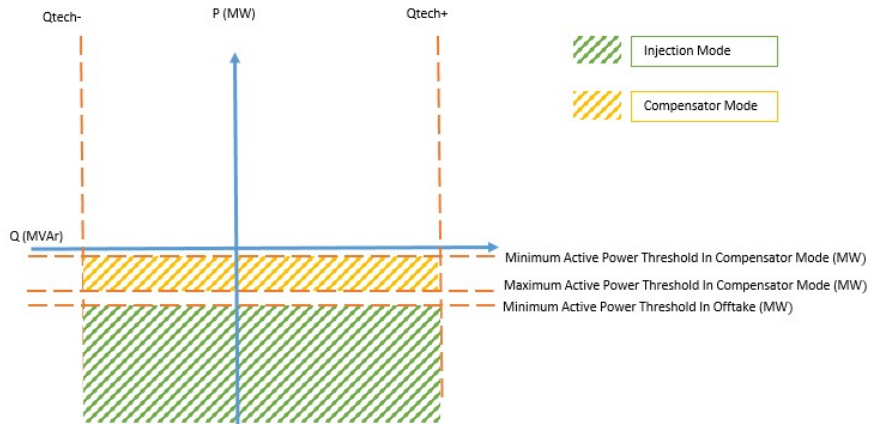


Figure 8: Technical Unit able to provide the Service in Injection Mode while offtaking Active Energy (option a (ii)) only and able to provide the Service in Compensator Mode (option b)

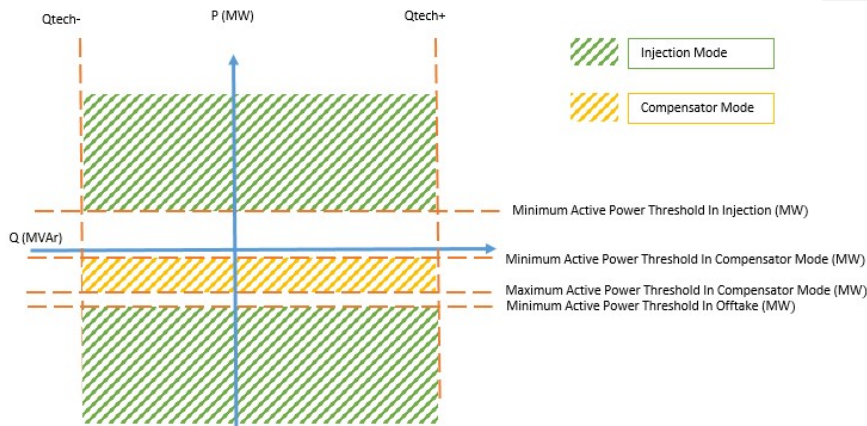


Figure 9: Technical Unit able to provide the Service in Injection Mode while injecting or offtaking Active Energy (option a (i) and a(ii)) and able to provide the Service in Compensator Mode (option b)

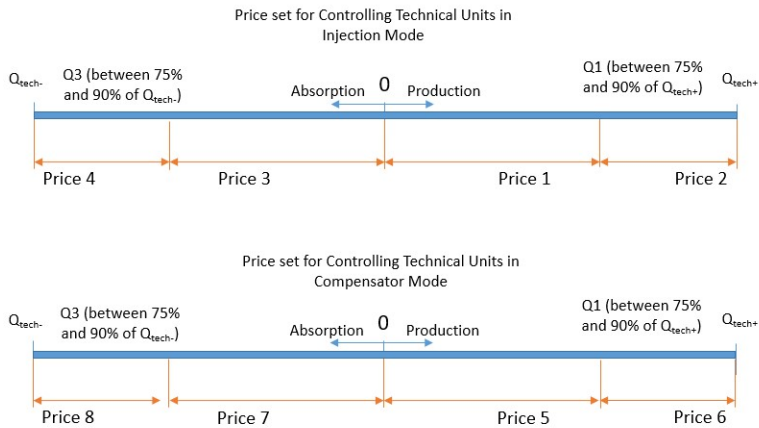
The VSP has the right to set different sets of prices according to the aforementioned criteria.

In particular:

- 4) For Controlling Technical Units, the VSP may set up to 2 prices for production or absorption. Technical Units that can provide the Service within Technical Control Bands equal to or larger than 20 MVar (whether in production or absorption) may split their Technical Control Band (in the side of production and/or absorption) in 2 price bands. The value of the Reactive Power defining the limit between the two price bands (referred as "Q1" and "Q3" in the

Annex 12 Remuneration for Activation

following figure) can be chosen by the VSP between 75 % and 90% of $Q_{tech\ max}$ in production and between 75 % and 90% of $Q_{tech\ min}$ in absorption upon technical justification of the chosen limit. The VSP may propose different prices for Injection Mode and Compensator Mode as follows:



Where:

- Q1 and Q3 are set for each Technical Unit in Annex 1;

For Controlling Technical Units that have Technical Control Bands lower than 20MVAR on the production and/or absorption side, VSP's may propose 1 price per side:

- Price 1 (P1) for the production side of Controlling Technical Units in Injection Mode ;
- Price 3 (P3) for the absorption side of Controlling Technical Units in Injection Mode;
- Price 5 (P5) for the production side of Controlling Technical Units in Compensator Mode;
- Price 7 (P7) for the absorption side of Controlling Technical Units in Compensator Mode;

- 5) For Non-Controlling Technical Units, the VSP may set one price for production (P9) and one for absorption (P10) of Reactive Power.



Annex 12 Remuneration for Activation

12.B APPLICABLE PRICES

- o Controlling Technical Units

Technical Units	Price in Injection Mode (€/MVAh)				Price in Compensator Mode (€/MVAh)			
	Production		Absorption		Production		Absorption	
	P1	P2	P3	P4	P5	P6	P7	P8

- o Non controlling Technical Units

Technical Units	Price (€/MVAh)	
	Production	Absorption
	P9	P10

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ANNEX 13. PREQUALIFICATION PROCEDURE

The Prequalification Procedure is performed before delivery of the Service and aims at measuring and determining the main characteristics and parameters used for the Service delivery and settlement.

In particular, the Prequalification Procedure will consist of the following steps:

a) Determination of available Technical Control Band

The VSP and Elia shall determine together based on technical documentation the Technical Control Band that the Technical Unit may put at Elia's disposal for the Service. This estimation is to be confirmed afterwards by the Prequalification Test.

b) Determination of local grid influence, Service Measurement Point and characteristics of the Service:

The VSP and Elia shall determine together the reference Service Measurement Point that will be used for the remuneration, Service steering and delivery control (among others for calculation of Q_{req} , Q_{failed} and $Q_{manual_missing}$ as per Annex 2, Annex 6 and 09 respectively).

The VSP and Elia shall also determine together how local grid topology affects delivery of Reactive Power to the Service Measurement Point. They will assess together influence of cables, production units, loads and/or other grid elements such as batteries that may have such an influence.

If, for any reason due to the local grid, the effect of both Automatic and Manual Control Service Types at the Service Measurement Point is not identifiable or effective, the Technical Unit may not provide the Service to Elia.

If the Reactive Power ramp rate technical capability of a VSP Controlling Unit may cause issues for the transmission grid operation, Elia shall indicate in Annex 1 the unit Reactive Power Ramping Rate. This only applies to assets able to modulate their Reactive Power ramp rate.

Automatic Control Service Type

As defined in III.3.3 a) and Annex 5, a Sensitivity Coefficient is determined by Elia in the contract following discussions between Elia and the VSP. This Sensitivity Coefficient defines the relation between the Grid Voltage and the Reactive Power produced or absorbed at the Service Measurement Point which is by default the Access Point or the Interconnection Point.

If, for any reason due to the local grid, this coefficient cannot be determined at the Access Point, Elia and the VSP will put everything in place to be able to find an alternative solution for the provision of the Service. Based on the discussions with the VSP, Elia may:

- either request to move the Service Measurement Point at a point located downstream the Access point⁷ in order to be able to determine this coefficient at a Service Measurement Point located between the Access Point and the connection point of the Technical Unit to the internal grid of the Elia Grid User. This option is subject to the agreement of the VSP (for example if appropriate measurement devices of the voltage and the Reactive Power and a metering device of the Reactive Power exist at this point and measurement values can be communicated to Elia in real-time). Under

⁷ This option is not applicable for a Technical Unit providing the Service at an Interconnection Point i.e. located in a Public Distribution grid

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Annex 13 Prequalification Procedure

these conditions, this point can then be defined as the Service Measurement Point as per Art III.3.4.

- Or to allow only the delivery of the Manual Control Service Type by the concerned Technical Unit at the Service Measurement Point

The Reference Setpoint of the Controlling Unit is also determined. This is the Reactive Power setpoint at which the Controlling Technical Unit is supposed to operate when Elia does not send a Setpoint to the VSP.

Manual Control Service Type

The Manual Service Type requires that the Reactive Power produced or absorbed at the output of the Technical Unit has a visible impact on the Reactive power measured at the Service Measurement Point.

For any Technical Unit delivering the Service this relation must remain stable in time. Should this relation change in any way, the VSP commits to immediately notifying any change to Elia.

The Maximum allowed Reactive Power ramp rate is also defined during the Pre-Qualification Process. This is the maximum change of Reactive Power allowed per second during a Reactive Power setpoint change of the Manual Control Service, for assets able to modulate their reactive power ramp rate.

Determination of delivery control modalities

According to results of analyses in all previous steps, Elia and the VSP shall determine together the modalities regarding the location of the Service Measurement Point according to dispositions of Art.III.3.4, Annex 6 and [09](#), in relation to the Service Measurement Point and local grid influence.

As a result of this analysis Elia and the VSP(s) shall decide also on whether provision of the Service by more than one VSP shall be made possible downstream of an Access Point, and whether it is possible to consider cumulated measures of several Technical Units (as per Art. III.3.4 b)).

c) Communication Test

- The VSP and Elia must perform a Communication Test to ensure that the following functionalities are well implemented by the VSP:
- Transmittal of a technical acknowledgement by the VSP when Elia sends a request for activation
- Transmittal of a business acknowledgement by the VSP to inform Elia of asset issues
- Transmittal of unavailability messages (Art. II.6.9) and their reasons (Art. III.6.18)
- Transmittal of signal for transition to Power Saving Mode (if applicable)

e)d) Prequalification Test

In order to validate all above modalities, the VSP and Elia must [agree/coordinate](#) to [execute/define](#) a Prequalification Test [date](#).

During this test, the VSP shall perform an activation of the Automatic and/or Manual Control Service Type (depending on which of the Service Types he is providing).

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Signature Elia:

Signature [VSP]:



Annex 13 Prequalification Procedure

In particular for the Automatic Control Service Type, he must, for the whole duration of the test, regulate his production or absorption of Reactive Power according to Grid Voltage according to requirements in Art. III.4. Moreover, during this same period, Elia will send one Setpoint as per Annex 8 to which the VSP must react accordingly.

The test is considered ~~successful~~successful if :

- the Technical Unit delivering the Automatic Control Service Type has correctly delivered the Service for all quarter-hours during a 10 hour period (as per rules in Annex 3), and has correctly reacted to the Setpoint request (as per rules in Annex 4);
- the Technical Unit delivering the Manual Control Service Type has correctly reacted to the Setpoint request (as per rules in Annex 4);

The test may be executed at a moment in time selected by the VSP and validated by Elia. ~~The test is performed at the expenses of the VSP.~~

Per Art. 76 of the Code of Conduct, the test is performed at the expenses of the VSP. If the test is successful, the costs incurred by the VSP are reimbursed by Elia. When Elia carries out these compliance tests and simulations, it may delegate this performance to an independent body designated by Elia.

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Signature [VSP]:



Annex 14 Communication

ANNEX 14. COMMUNICATION

Technical communication requirements are available on the ELIA website or can be requested by e-mail to the ELIA contractual responsible listed in Annex 10.

In accordance with III.6.8, communication regarding the Reactive Power control capability occurs through two electronic processes:

- 1) External communication layer (ECL)
- 2) Web based application

In case of unavailability of the above electronic processes, the VSP and Elia will communicate by phone and e-mail, using the contact details listed in Annex 10.

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