

Basic principles of ancillary service products

Product description – valid from February 2017

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2.0	20.10.2008	Decision of Swissgrid Executive Board
3.0	04.05.2009	Pay-as-Bid, price limits
4.0	16.09.2009	Amendment to the tender amounts
5.2	10.06.2010	Liquidity-boosting measures
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Table of contents

1	Introduction	2
2	Frequency control	3
2.1	General principles	3
2.2	Primary control	4
2.2.1	Secondary control and Tertiary control	5
2.2.2	Secondary Control	5
2.2.3	Tertiary control	6
2.2.3.1	Power provision	6
2.2.3.2	Energy supply	7
3	Active power losses and inadvertent deviation	8
4	Voltage support	9
4.1	Active and passive voltage support	9
4.2	Extra-mandatory voltage support (phase shifter)	9
5	References	9

1 Introduction

Since 1 January 2009, the ancillary services (AS) primary, secondary, tertiary control and compensation of active power losses in the Swiss transmission grid have been procured by Swissgrid predominantly in the Swiss control area via tenders. With the signing of the «Cross-border exchange of primary control reserves» by RTE, Swissgrid can also procure primary control from France from 20 December 2010. A further share of primary control power will be procured in a joint tender with the German transmission system operators as of March 2012. As of July 2013, Swissgrid and APG will be purchasing primary control power together by means of the TSO-TSO model. This means that PCP offers from Swiss or Austrian bidders can be contracted for the other respective control area. The ancillary services «voltage support» and «automatic start-up/island operation capability» will be procured by means of bilateral agreements with individual generating units.

This document provides a detailed description of the products put out to tender. As a result of the improvement options already announced and due to initial operating experience, the product definition will be continually refined over time within the scope of organisational and technical possibilities in order to meet new demands.

2 Frequency control

2.1 General principles

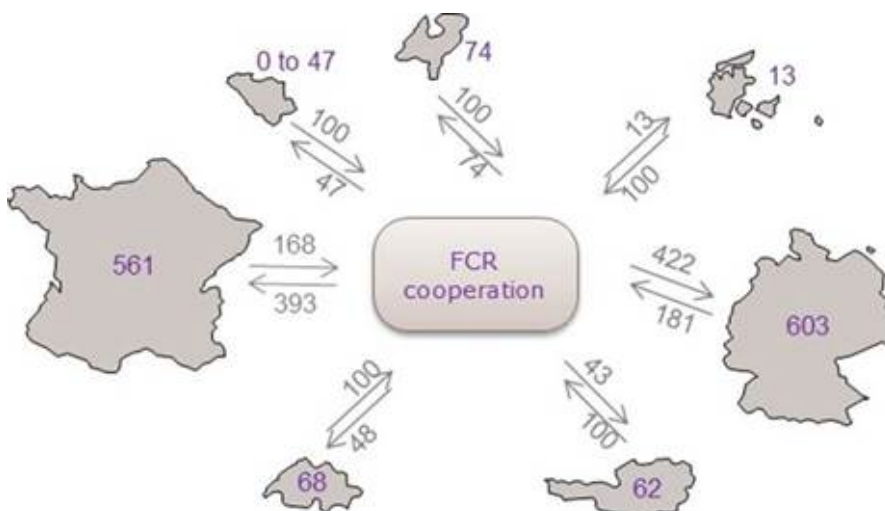
Bidders	Generating unit portfolio («pool») or individual generating units.
Conditions for participation	<ul style="list-style-type: none"> • Only companies that have concluded a framework agreement with Swissgrid may submit bids. • The requirement for concluding a framework agreement is successful prequalification by Swissgrid or, for French providers of primary control power (PCP), the contracts required by RTE for provision of PCP for Switzerland. • The bidder is not compensated for costs incurred as a result of prequalification.
Tender periods	<ul style="list-style-type: none"> • Primary and secondary control: weekly • Tertiary control: weekly and daily
Framework conditions of the bids	<ul style="list-style-type: none"> • Every market participant may submit an unlimited number of bids. • A specific minimum size in MW is prescribed for each product.
Bid structure	<ul style="list-style-type: none"> • In order to be able to correctly assess the minimum production of the generating units in the bids, a bid may comprise several volume/price combinations depending on the product (incrementally at different prices per MW) (multi-level bid). • A bid cannot be split, i.e. bids cannot be partially awarded. • The price for PCP is given per MW in Euro [EUR/MW] • The price for SCP and TCP is given per MW in Swiss francs [CHF/MW].
Selection criterion	The procurement costs are minimised based on the bid prices for power provision.
Pool	The bidder is responsible for coordination in the pool of generating units.
Power provision	<ul style="list-style-type: none"> • Continuous provision of the contracted control power. • Criterion: 100 % availability of the pool's capacity. • The location of the provision can be chosen freely from within the pool and amended until the start of the relevant 15-minute period – see «Requirements for schedule data» [1].
Monitoring and checks	On request, high-resolution, precise measurement data must be provided to Swissgrid by the operator – see «Requirements for monitoring data» [2].
Supply from abroad	Due to technical and organisational restrictions, initially only the supply of primary control from France, Germany and Austria is possible. As soon as the technical and organisational requirements have been met for individual control energy products, this restriction will be lifted.
Publication	Anonymous publication of the bids.
Completion of tender	In accordance with the tender calendar at www.swissgrid.ch .

2.2 Primary control

The procurement of the primary control power required for Switzerland is realized by a combined auction between Austria, Germany, the Netherlands and Switzerland. This common cooperation is called "FCR Cooperation"

Volume of primary control power required for Switzerland	± 68 MW
Product	Symmetrical control power bands
Tender period	Weekly, 00:00 Monday – 24:00 Sunday
Request	Frequency controller with droop set on site for each machine
Remuneration of capacity	Bid price for contracted primary control power
Remuneration of energy	No remuneration for primary control energy delivered
Demand forecast	Annual – ENTSO-E specifications
Offer size	25 MW per bid
Bid structure	<ul style="list-style-type: none"> • Minimum output windows of ±1 MW • Multiple volume/price combinations per bid are permitted (multi-level bids), each incrementally ±1 MW at different prices

The following graph represents the import/export limit in MW per country according to system operation guidelines based on 2017 values^[1]. The values in purple for each country represent the FCR volume in MW procured in the FCR cooperation for each country based on 2017 values^[2].



^[1] These values represent the System Operation Guideline limits. The actual import/export limits can be lower, such as for 6 months after France coupling (France FCR imports limited to 30% of RTE FCR demand, and FCR exports limited to 15% of RTE FCR demand).

^[2] The values procured by BE, DK & NL in the FCR cooperation are lower than their total FCR need, since a part of the FCR need is procured through different mechanism. BE demand is variable.

2.2.1 Secondary control and Tertiary control

The quantity awarded for secondary control and tertiary control will be calculated by means of a stochastic optimisation of bids, taking account of system security requirements (expressed as power deficit probability). The tender quantities specified are reference values.

2.2.2 Secondary Control

Volume	Ca. ±400 MW Details published quantities
Offer size	50 MW per bid
Product	Symmetrical control power bands
Bid structure	<ul style="list-style-type: none"> • Minimum output windows of ±5 MW • Multiple volume/price combinations per bid are permitted (multi-level bids), each incrementally ±1 MW at different prices
Tender period	Weekly, 00:00 Monday – 24:00 Sunday
Request	Proportional to bidder's contracted capacity
Remuneration of capacity	Bid price for procured secondary control power
Remuneration of energy	<p>According to control signal averaged over a period of 15 minutes</p> <p>Positive SwissIX hourly price:</p> <p>Positive SCP request (energy flow: bidder > Swissgrid): SwissIX hourly price + 20% although at least weekly base (cash flow: Swissgrid > bidder)</p> <p>Negative SCP request (energy flow: Swissgrid > bidder): SwissIX hourly price - 20% although maximum weekly base (cash flow: bidder > Swissgrid)</p> <p>Negative SwissIX hourly price:</p> <p>Positive SCP request (energy flow: bidder > Swissgrid): SwissIX hourly price - 20% although at least weekly base* (cash flow: Swissgrid > bidder)</p> <p>Negative SCP request (energy flow: Swissgrid > bidder): SwissIX hourly price + 20% although maximum weekly base* (cash flow: Swissgrid > bidder)</p> <p>*Including prices with +/- sign</p>
Energy settlement	According to post scheduling, obtained from control signal averaged over a period of 15 minutes (in 0.1 MWh)
Link	Control signal to bidder
Demand forecast	Studies by Swissgrid

2.2.3 Tertiary control

2.2.3.1 Power provision

Volume	See published quantities
Offer size	100 MW per bid
Product	Asymmetric control power bands
Bid structure	<ul style="list-style-type: none"> • Minimum output windows of +5 MW or –5 MW • Multiple volume/price combinations per bid are permitted (multi-level bids), each incrementally ± 1 MW at different prices
Tender period	<p>Daily:</p> <ul style="list-style-type: none"> • Midnight – 4 a.m. • 4 a.m. – 8 a.m. • 8 a.m. – midday • Midday – 4 p.m. • 4 p.m. – 8 p.m. • 8 p.m. – midnight <p>Weekly (00:00 Monday – 24:00 Sunday)</p>
Remuneration of capacity	Bid price for procured tertiary control power
Link	Request by e-mail (plain-text and ERRP) and telephone call
Demand forecast	Studies by Swissgrid

2.2.3.2 Energy supply

In addition to the power tendering process, tertiary energy is put out to tender. In the energy tenders, all bidders who receive a contract in the power tendering process must submit a bid. Additional energy can also be offered voluntarily.

Volume	Ca.+450 MW, Ca.–300 MW
Product	<ul style="list-style-type: none"> • Daily (D-1) tenders for each 4-h block. • The prices are given per MWh in euros [EUR/MWh]; the energy prices can be adjusted intraday up to the bid deadline. • The minimum bid size is 5 MW. • Obligatory and voluntary bids must always be held in reserve.
Operating availability	Minimum request duration of 15 minutes, unlimited deployment must be guaranteed
Request	<p>The request is in accordance with the bids, i.e. it is not possible to request parts of bids.</p> <p>Bids for daily tenders and voluntary bids:</p> <ul style="list-style-type: none"> • Positive and negative tertiary energy supply: capacity must be 100 % available 15 minutes after being requested, i.e. irrespective of the timing of the schedule interval. <p>Bids for weekly tenders:</p> <ul style="list-style-type: none"> • Positive tertiary energy supply: capacity must be 100 % available 15 minutes after being requested, i.e. irrespective of the timing of the schedule interval. • Negative tertiary energy supply: the request is made on the full quarter-hour with a lead time of at least 20 minutes, i.e. the lead time is 20 to 35 minutes.
Termination of supply	At the end of a schedule interval (full quarter-hour)
Remuneration of energy	According to the offer for 4-h block and the energy supplied/used
Request criterion	Bid price for 4-h block
Energy settlement	According to post scheduling

3 Active power losses and inadvertent deviation

Bidders	Balance groups in the Swiss control area
Conditions for participation	Concluded framework agreement without prequalification
Pool	The bidder is responsible for coordination in the pool of generating units.
Tender period	Monthly tender: first day of the month 00:00 – last day of the month 24:00.
Product	Monthly volume
Volume	According to active power loss forecast
Bid structure	5 MW windows (precisely)
Bid	Price per 5 MW in euros, unlimited number of bids possible
Selection criterion	Bid price
Compensation	Bid price for each 5 MW band awarded
Request	According to schedule
Energy settlement	According to schedule
Publication	Anonymous publication of all bids
Supply from abroad	A delivery to compensate for active power losses must always be made via a balance group registered in Switzerland; this means that the energy transfer takes place in Switzerland.

Inadvertent deviation is charged using the daily active power loss forecast and procured on the exchange.

4 Voltage support

4.1 Active and passive voltage support

The voltage support concept which applies from January 2011 can be found in the document «Voltage support concept for the Swiss transmission system from 2011» [3].

4.2 Extra-mandatory voltage support (phase shifter)

Bidders	Power plants, distribution systems and end customers connected directly to the transmission system
Contract	Bilateral agreements on the provision of extra-mandatory reactive power in which the bidder undertakes to provide the contractually defined capacity of reactive power on request from Swissgrid, in accordance with the «best of one's abilities» principle. Only companies that have completed a framework agreement following successful prequalification may submit bids.
Provision	No actual provision of reactive power is required, but it is provided based on the «best of one's abilities» principle. The participant is only obliged to deploy the contractually agreed machines for voltage support if they are available.
Compensation	The standard extra-mandatory reactive power provision agreement provides for the following compensation components: <ul style="list-style-type: none"> • Remuneration of exchanged reactive energy equal to that in the mandatory range (tariff in CHF/Mvarh). • Additional remuneration for starting up a machine to provide reactive power at Swissgrid's request (CHF per start, individual for each machine). • Additional remuneration for every hour of operation commenced for a machine requested by Swissgrid (CHF per hour commenced, individual for each machine).
Monitoring	Conformity is monitored during operation using voltage measurement data – see «Requirements for monitoring data» [2].

5 References

- [1] Swissgrid Ltd., **Requirements for schedule data**, the current, valid version of which is published on www.swissgrid.ch.
- [2] Swissgrid Ltd., **Requirements for monitoring data**, the current, valid version of which is published on www.swissgrid.ch.
- [3] Swissgrid Ltd., **Voltage support concept for the Swiss transmission system from 2011**, the current, valid version of which is published on www.swissgrid.ch.