

СОВЕТ РЫНКА

ПО ОРГАНИЗАЦИИ ЭФФЕКТИВНОЙ СИСТЕМЫ
ОПТОВОЙ И РОЗНИЧНОЙ ТОРГОВЛИ
ЭЛЕКТРИЧЕСКОЙ ЭНЕРГИЕЙ И МОЩНОСТЬЮ

НЕКОММЕРЧЕСКОЕ ПАРТНЕРСТВО

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The Russian Capacity Market: Main Principles and Pricing

CONFERENCE:

**Regulators' Role in Developing Energy Infrastructure,
Investments and Operational Rules for Networks: EU and
Russian Experience and Plans**

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Capacity is a special good, which when sold signifies the producer's availability for electricity generation and when acquired guarantees the consumer the possibility of purchasing the necessary volume of electricity

Main reasons for introducing a capacity market in Russia:

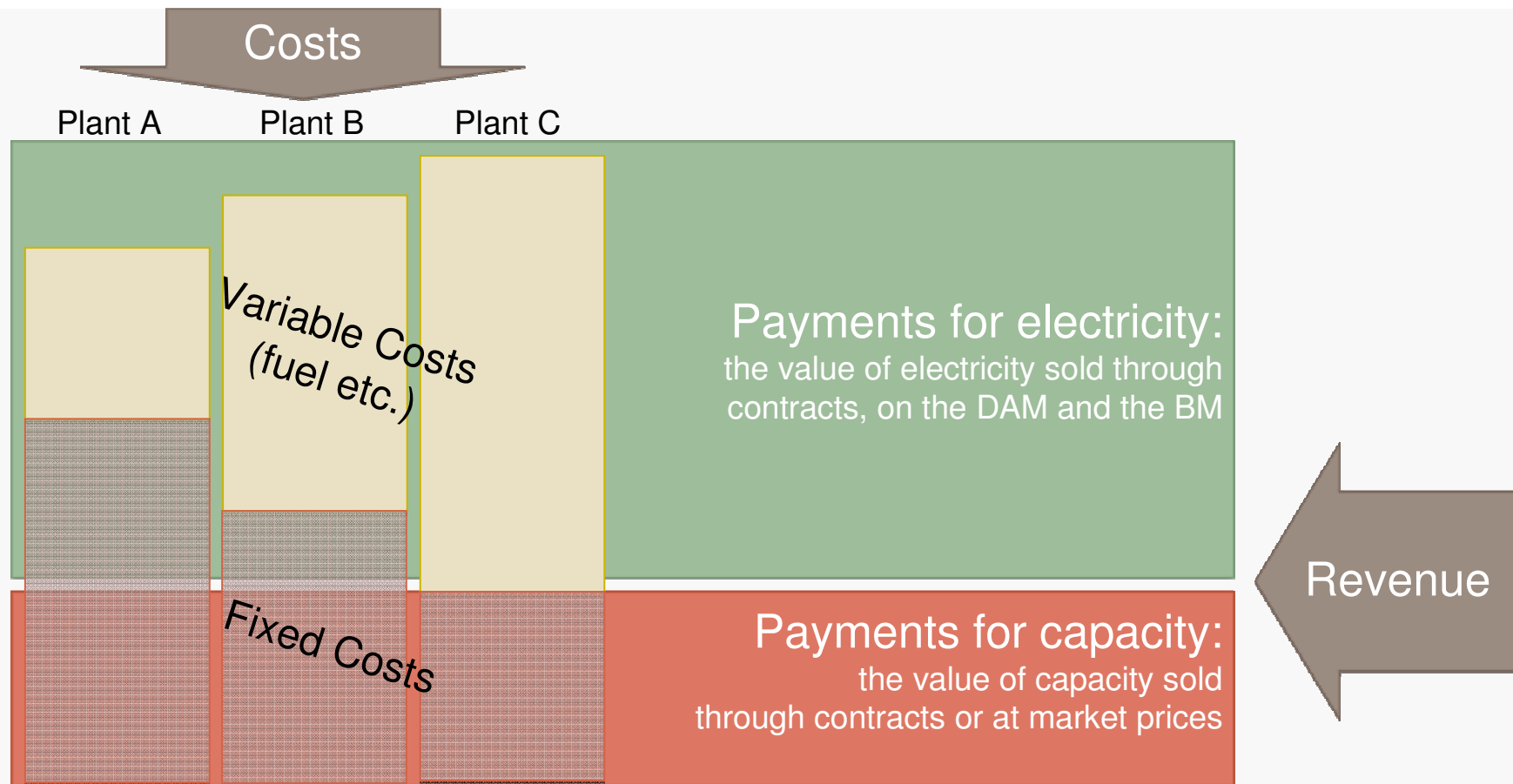
- limited possibilities for generators to compensate fixed costs in the short-term electricity market (taking into account the absence of special payment arrangements for reserve capacity, the lack of a mature market for long-term contracts and the existence of price caps on the electricity market)
 - the need to provide incentives for the construction of new generating facilities and the upgrading of existing facilities
- *The capacity market in its existing state was introduced in Russia on January 1, 2011 (the first selection for 2011 was conducted at the end of 2010, the second for 2012 – in October 2011).*
 - *Capacity sale revenues amount to around 35% of generators' annual revenues (this figure was around 50% in the regulated market).*
 - *Currently a significant share of generating facilities is in need of upgrade or replacement. The total volume of the investment program for the construction of new generating facilities on the wholesale market (in prize zones) up to 2020 amounts to 41.2 GW (30 GW – thermal, 11.2 GW – nuclear + hydro).*

- **Ensuring long-term stability – preventing deficiency in the power system**
- Minimizing the total cost of electricity and capacity for consumers
- Creating a generation mix that is as efficient as possible
- Creating regional price signals for the development of generation, consumption and network facilities
- Improving the industry's investment climate by providing suppliers with long-term guarantees
- Creating incentives for investments in the construction and upgrading of fixed assets

The capacity market operates in wholesale market price zones (I – Europe, Ural and II – Siberia) (excluding the Primorsk Krai and Khabarovsk Krai, the Amur, Magadan, Sakhalin, Kamchatka, Kaliningrad and Arkhangelsk regions, and the republics of Yakutiya and Komi)

Price zones are split into *Free Flow Zones (FFZs)* that take account of planned capacity supply limits between them



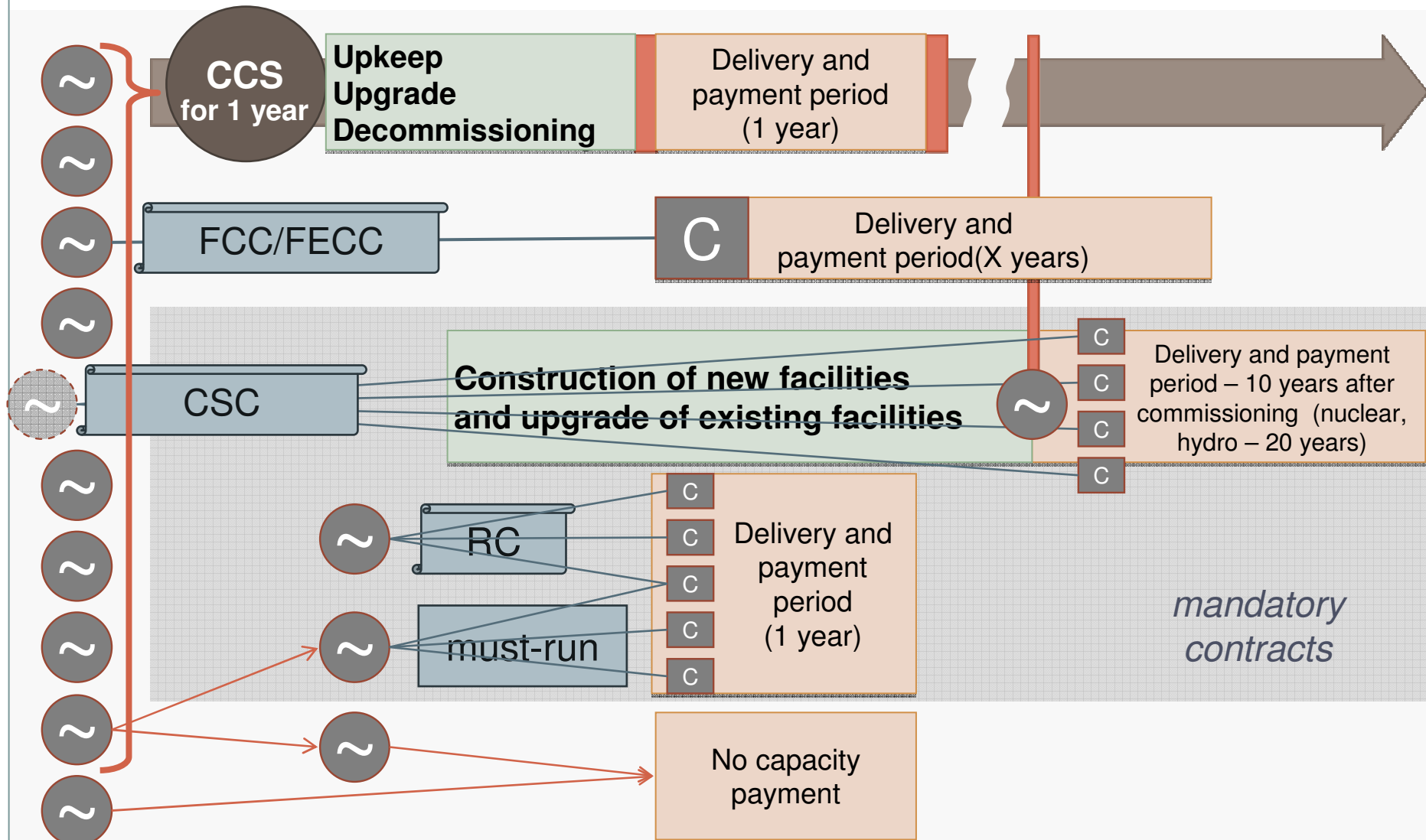


Payments received through the capacity market, **do not have to fully recover the supplier's fixed costs**, as the supplier will be able to recover a part of his fixed costs in the electricity market – this arrangement enables competition based on total costs

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Main Mechanisms in the Capacity Market



Capacity sold based on the results of Competitive Capacity Selection (CCS)

Selling capacity selected during CCS that was not sold under other types of agreements

Free Capacity Sale and Purchase Contracts (FCCs)

Selling capacity for which capacity sale and purchase contracts (FCC) have been concluded, provided that it was selected at the CCS

Regulated Contracts (RCs)

Electricity and (or) capacity sale and purchase contracts between the supplier and the buyer, prices match electricity and (or) capacity tariffs set by the FTS (only for supply of the population and other equated categories of consumers)

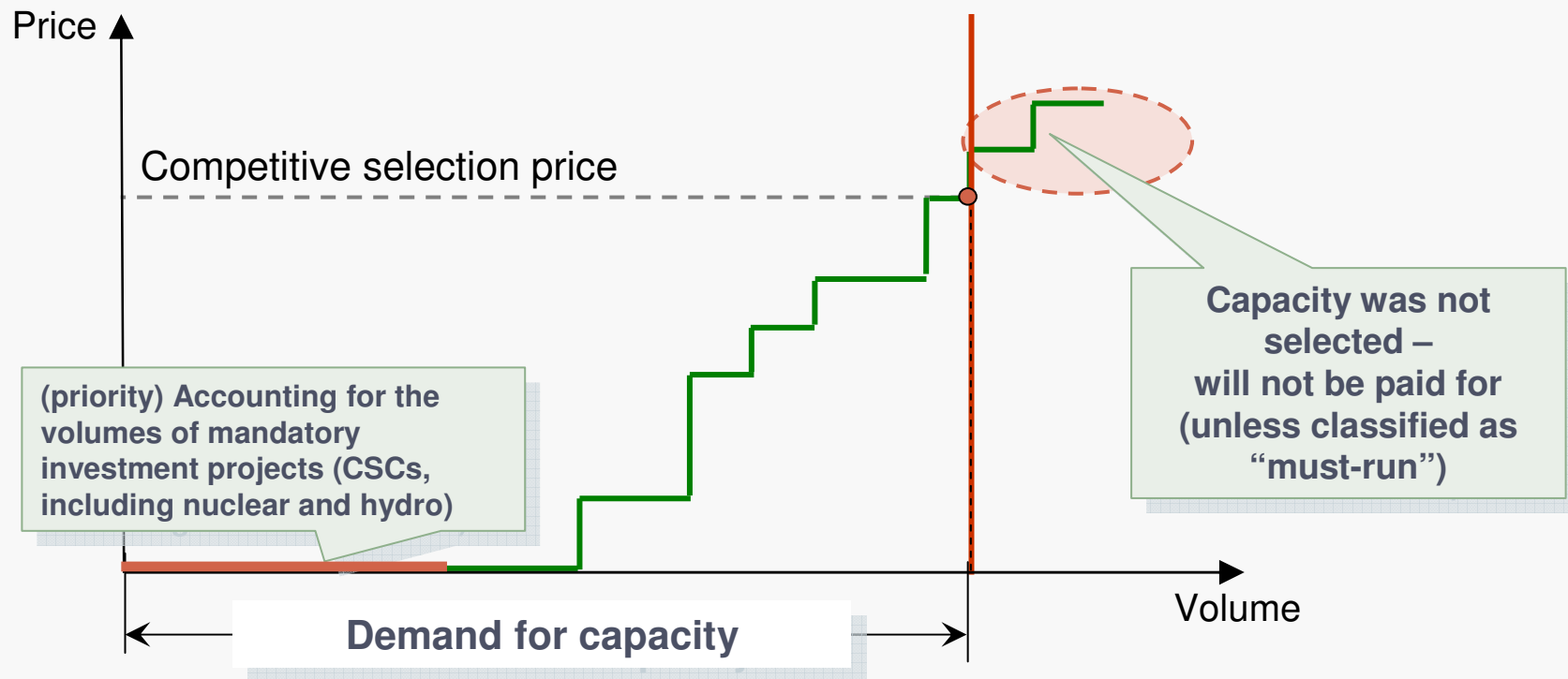
Capacity of generating facilities, for which CSCs have been concluded + Capacity of new NPPs and HPPs, for which agreements for the sale and purchase of capacity of new NPPs and HPPs have been concluded

Selling thermal capacity under long-term contracts

Selling nuclear and hydro capacity on conditions similar to those of CSCs

Capacity of “must run” generators

Selling the capacity of generating facilities that were not selected during the CCS, but must continue operating for technological or other reasons



During competitive selection:

- the limits of capacity transfer between FFZs are taken into account
- the capacity of generating facilities, the technical characteristics of which ensure power system operation (regulation range, ramp up and ramp down rates), is selected, minimum technical requirements are set

In the run-up to the competitive selection

- The FAS of Russia analyzes the competition in free flow zones and determines the following:
 - for FFZs with limited competition a maximum price (threshold) is set and approved by the Government
 - for FFZs, where competition exists – the selection is carried out without price caps. Wholesale market participants submit information on their affiliates to the FAS of Russia (since the entry into force of the resolution on anti-monopoly control rules)
 - the FAS may set special conditions for the participation of certain suppliers in the competitive selection

During selection

- Controlling the economic justification behind price bids

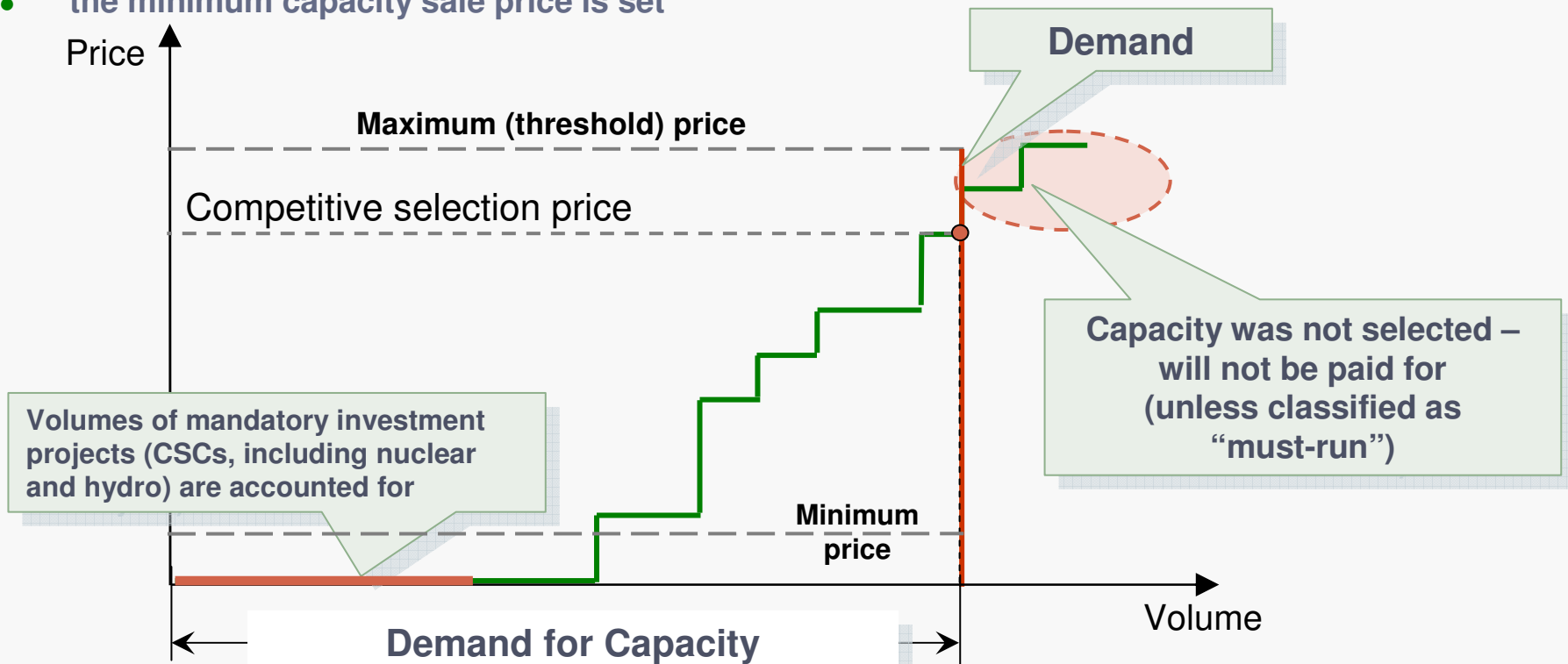
After selection

- In the event that the FAS identifies a case of price manipulation competitive selection results may be annulled by decision of the NP “Market Council” Supervisory Board and a repeat selection carried out

To improve competition: measures aimed at expanding (combining) FFZs should be taken on a regular basis

During competitive selection:

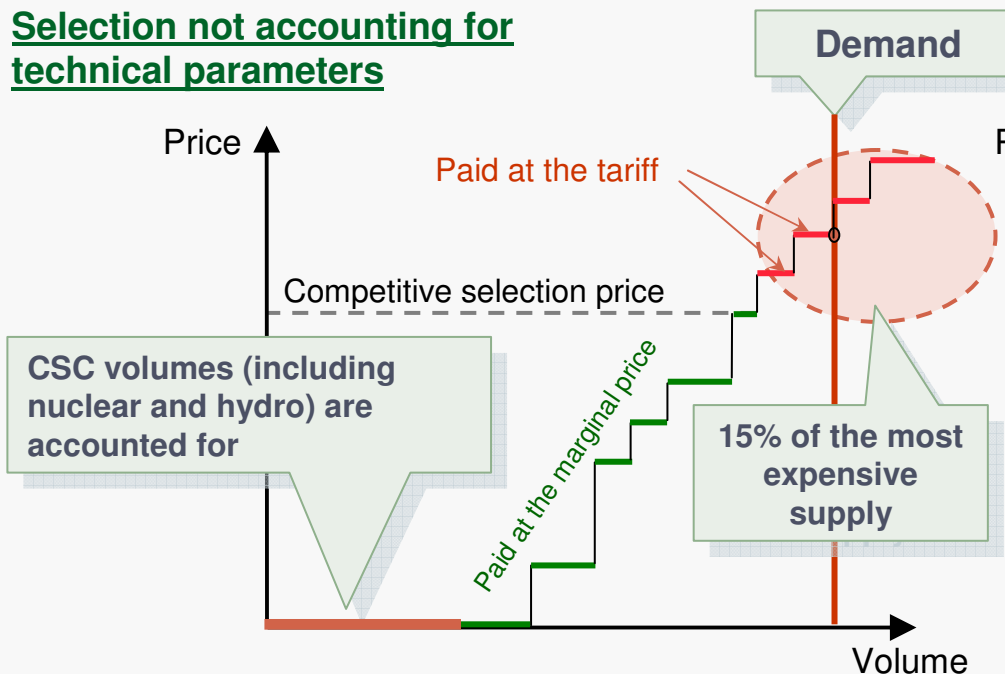
- suppliers submit bids containing prices that do not exceed the maximum price of capacity, thus establishing the supply curve (bids containing prices that exceed the threshold level are not taken into account)
- the capacity of generating facilities, the technical characteristics of which ensure power system operation, is selected
- the minimum capacity sale price is set



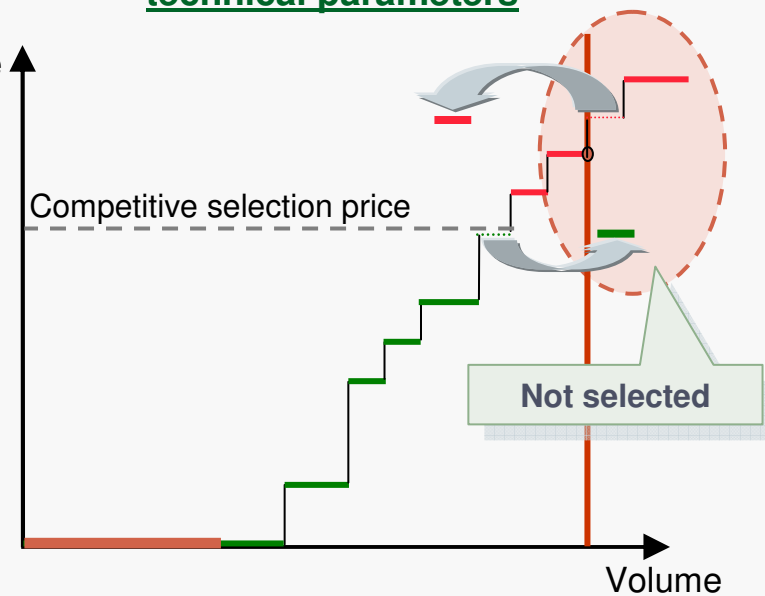
Particularities of competitive capacity selection without price caps:

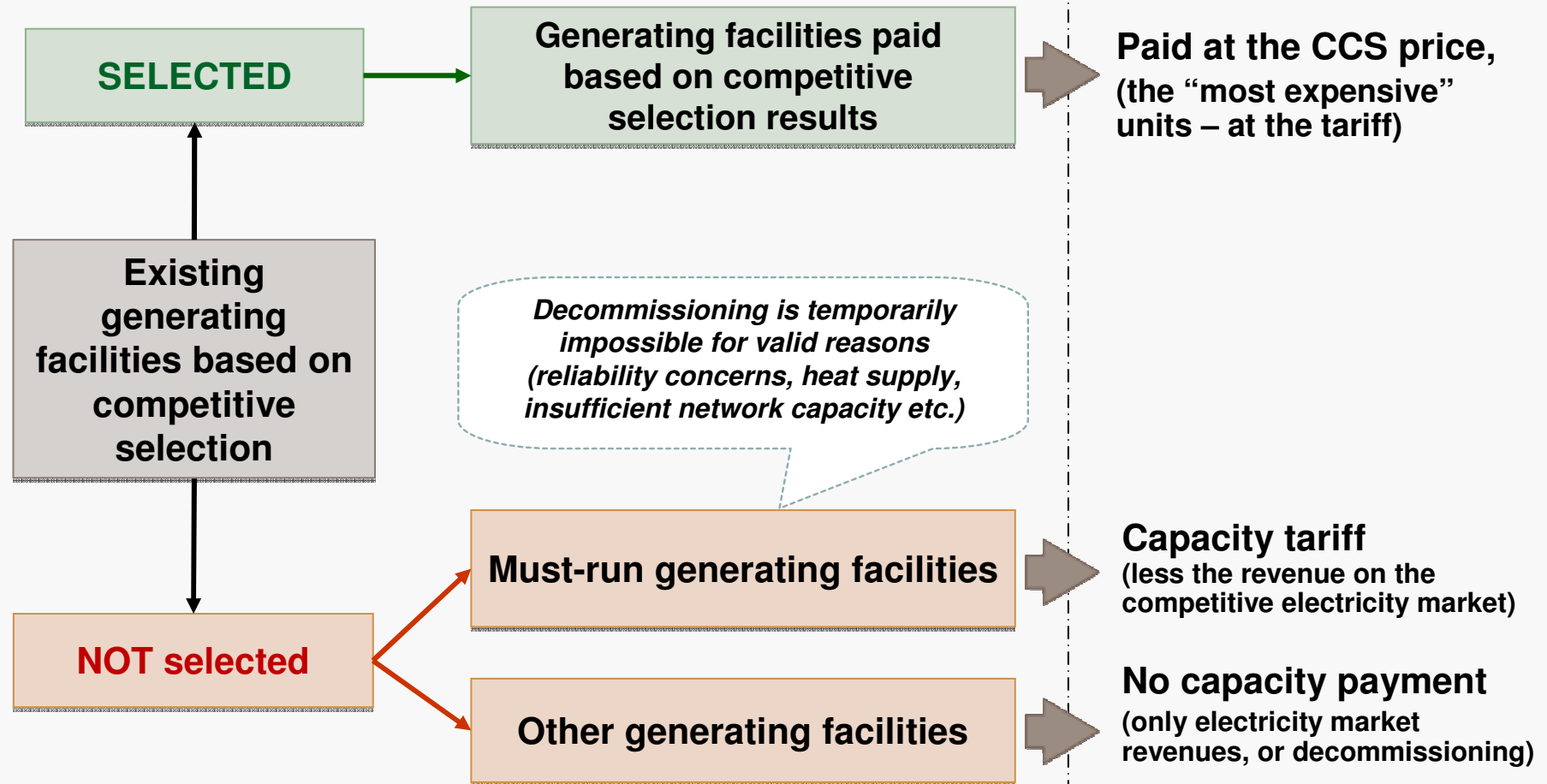
- a supplier that owns a significant share of generation in an FFZ may only submit a price bid for a volume of capacity not exceeding 15% of total capacity in the FFZ, a price-taking bid is submitted for the remaining volume
- 15% of the most expensive supply is not used in the marginal price calculation
- the capacity of generating facilities, the technical characteristics of which ensure power system operation, is selected, HOWEVER the selection price is calculated without taking technical parameters into account

Selection not accounting for technical parameters

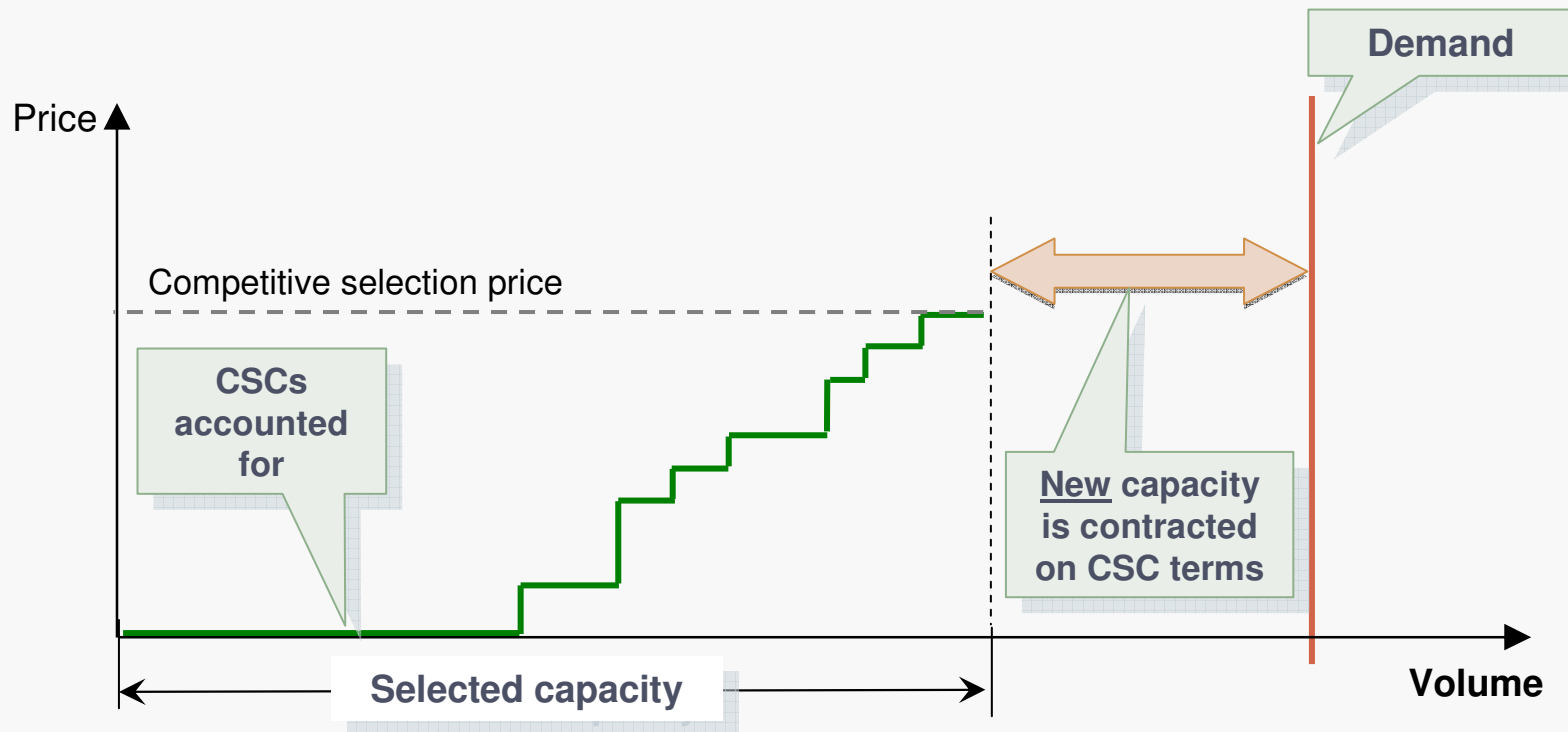


Selection accounting for technical parameters





Supply during competitive selection does not meet demand



For investment projects chosen during the additional selection contracts similar to CSCs are concluded. The price in these contracts is equal to the bidding price (but not above the capacity price contained in CSCs for facilities of the same type)

A CSC is a generating company's obligation to commission new capacities with predefined characteristics in a predetermined timeframe subject to guaranteed payment for commissioned capacity over a certain period of time

The background of CSCs:

- When RAO UES of Russia was reorganized generating companies (OGKs/TGKs) were established, their controlling stakes were acquired by new owners through additional share issue purchase
- The terms of selling these shares were set based on the need to fund investment programs, the list of which was initially approved by the RAO UES of Russia BoD
- In 2008-2010 timeframes and certain characteristics of the investment programs were updated and the contractual arrangements of CSCs were refined – the contracts were then resigned on the new terms
- In 2010 long-term supply contracts for new nuclear and hydro capacity (similar to CSCs) were signed

The fulfillment of investment obligations under CSCs is provided for by special mechanisms of control over their execution and by the contractual liabilities of the parties for failure to fulfill such obligations. Market rules also contain a set of provisions promoting the fulfillment of CSCs.

**The planned volume of capacity commissioning under CSCs amounts to roughly 41,2 GW
(30 GW thermal, 11.2 GW nuclear + hydro)**

The price for capacity under CSCs is calculated so as to compensate the following components:

- “Reference” capital expenditures that depend on the unit’s characteristics (for example, for gas-fired generation over 250 MW – €720, for coal-fired generation over 225 MW – €1230)
- Operating costs
 - €2000 per MW a month – for gas-fired generation
 - €3075 per MW a month – for coal-fired generation
- Property tax
- Costs associated with technological connection to electric and gas networks are calculated based on actually incurred costs
- Payment period under the contract – 10 years, payback period – 15 years.
- The basic rate of return on invested capital used is WACC=14% (if the rate of return on long-term federal loan bonds deviates from 8.5% – the WACC is recalculated)
- Only a part of total costs is compensated (excluding technological connection costs) – the rest is compensated by DAM profits.
For example: 75% – for gas-fired generation with a capacity of 150 to 250 MW in the 1st price zone, 95% – for coal-fired generation in the 2nd price zone.
- Accounting for the “book” value of generation assets

In the **CCS** the selected volume of capacity is determined for each generating facility:

Capacity selected at the CCS

Capacity certification – determining the maximum volume of capacity that can be supplied by this generating unit for the respective year

Certified capacity

Non-certified capacity – non-payment + fine

Only certified capacity is paid for in the volume of selected capacity (not more)

Actually supplied volume of capacity for each month

Based on the supplier's fulfillment of generating equipment availability requirements (set by Government Resolution) the System Operator determines the fraction of the maximum volume that was actually supplied to the wholesale market. Auxiliary requirements are also deducted

Supplied capacity

The part of certified capacity that was not supplied is not paid for

Existing nuclear and hydro generators participate in competitive selection procedures on the same terms as others, however

- in 2011-2012 the FTS sets a markup to the capacity price for existing nuclear and hydro generators in order to fund investment projects and safety costs
- as of 2013 – a markup to the market price of capacity is only set if wholesale market revenues are insufficient for safe operation (paid out in the following period)

New nuclear and hydro generating facilities

- sell capacity through contracts similar to CSCs
- are given the right to postpone commissioning for up to 1 year without being fined (subject to prior notification 1 year before the initial commissioning date)
- prices for new facilities are set by the FTS, electricity sales revenues and funds received as part of “Proper Use of Funds” or the investment part of the tariff are deducted from the price
- the term of contracts for nuclear and hydro generation is 20 years with an estimated payback period of 25 years
- the volume of new nuclear and hydro capacity under these contracts amounts to 11.2 GW

Volume of capacity purchase on the wholesale market:

- the purchase volume is proportionate to actual peak consumption
- for large consumers – a possibility to independently plan (with a responsibility to stay within planned volumes) and fix capacity purchase volumes in advance – with account of the planned reserve factor
- payment for new CSC capacity – evenly between the consumers of the price zone
- payment for capacity selected at the CCS at FFZ prices (localized price signals)
- payment for new capacity selected if supply during CCS is insufficient – evenly between the consumers of the free flow zone (localized price signals)

Mechanisms of purchasing capacity

- through CSCs and new nuclear and hydro contracts
- purchasing must-run capacity
- through free contracts
- at the competitive capacity selection price

Free bilateral contracts

- are a mechanism of hedging the supply price
- significantly improve the industry's investment climate

- Free Capacity Sales and Purchase Contracts (FCCs) are registered before the capacity supply period
- FCCs can be both over-the-counter and exchange-traded, they may also contain any kinds of provisions for electricity supply (FECCs)
- FCCs may only be concluded within one FFZ

The volume of capacity sold/purchased under FCCs is accounted for

- when determining the volume of capacity that a buyer must purchase at the competitive selection price, by reducing this volume
- when determining the volume of capacity that a supplier may sell at the competitive selection price, by reducing this volume

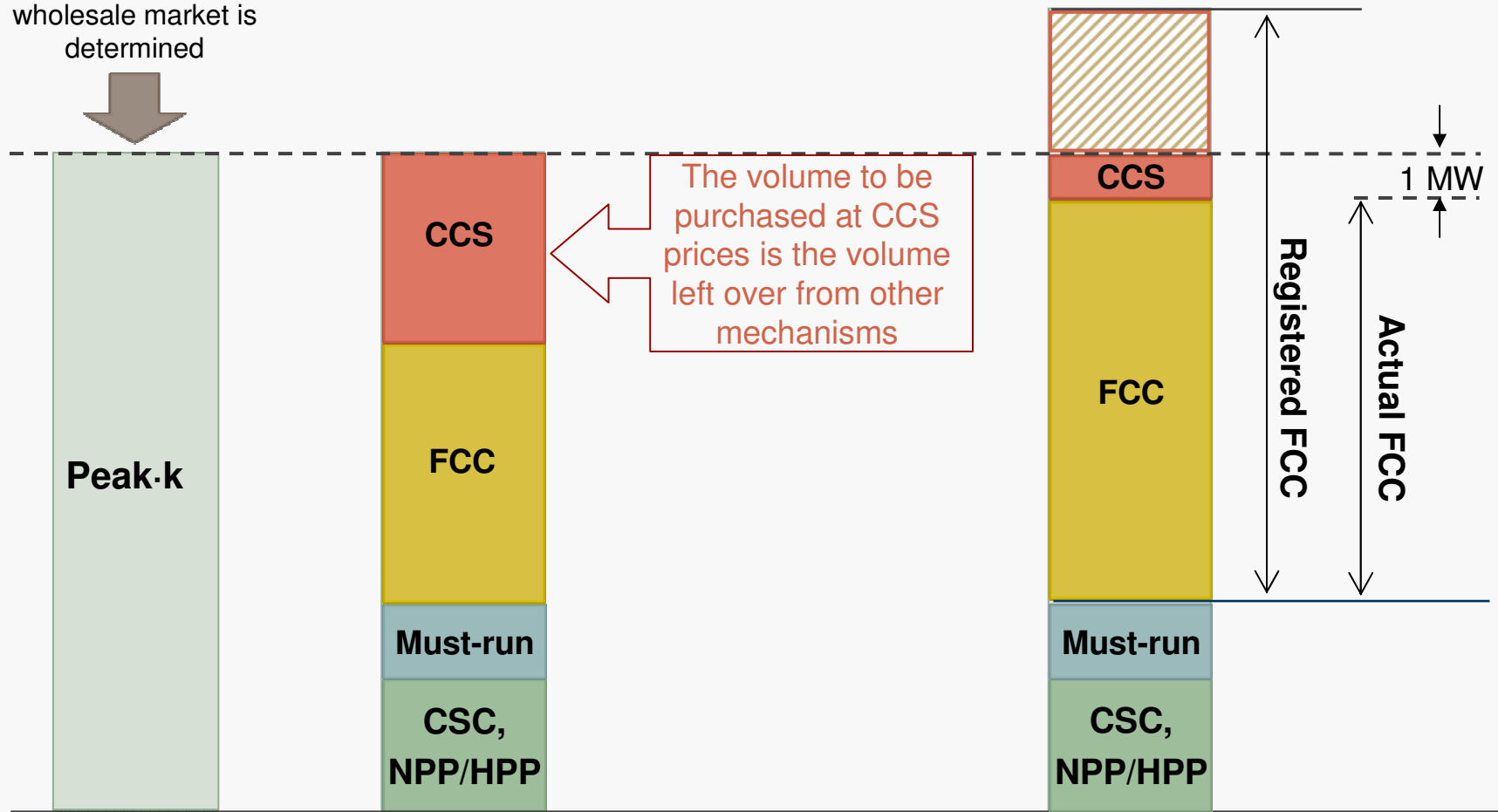
The volume of capacity sold under FCCs may not exceed

- the volume of capacity actually produced by the supplier (in connection to this FCC)
- the volume of capacity actually purchased by the buyer and not covered by other mechanisms (in connection to this FCC)

Based on the results of each month the volume of capacity to be purchased on the wholesale market is determined



Different mechanisms of capacity purchase



Improved investment climate in the electricity industry of Russia

- emerging long-term price characteristics of the market and levels of payment for facilities under CSCs
- transition to a system of long-term capacity sale and purchase contracts (CSCs and contracts based on competitive selection results)
- establishing regional price signals, as well as levels and terms of payment that provide incentives to upgrade existing capacities

Better appeal of market pricing mechanisms to consumers

- introducing new quality and cost criteria to the system of selecting generating facilities and as a result smaller number of inefficient power plants
- emerging possibility of long-term capacity price forecasting and electricity consumption cost management
- in the future – increased market elasticity as a result of payments shifting from capacity to electricity

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Thank you for your attention!