



ЈАВНО ПРЕДУЗЕЋЕ
ЕЛЕКТРОМРЕЖА СРБИЈЕ

Mission

The continuous, secure and reliable supply of high quality electricity to customers in Serbia, the non-discriminatory access to the transmission system and provision of transit according to the cross border transmission rules.

Vision

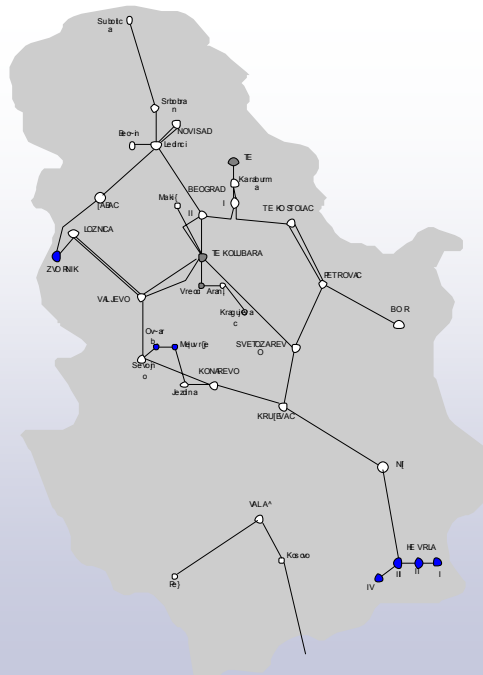
The efficient company built upon a modern concept, ensuring the high level of security of electricity supply to consumers and development of electricity market in Serbia

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History

Transmission network in the year 1958

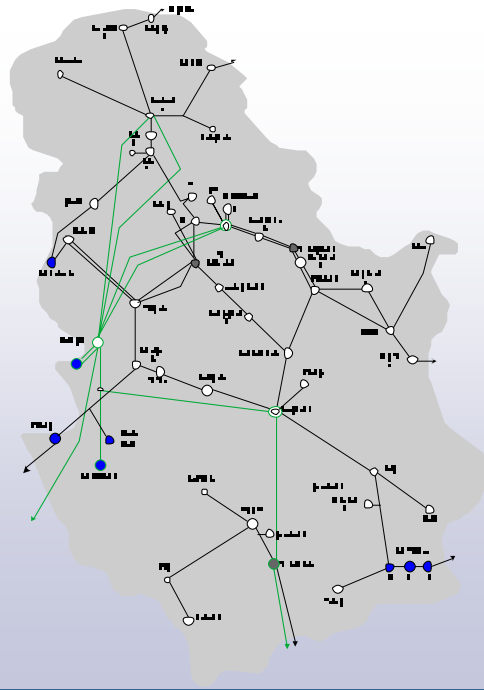
- Establishment of transmission company
- Transmission network included lines and substations 110 kV
- System comprised generators in small hydro and thermo power plants
- Preparations to introduce 220 kV network (1960)



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Transmission network in the year 1968

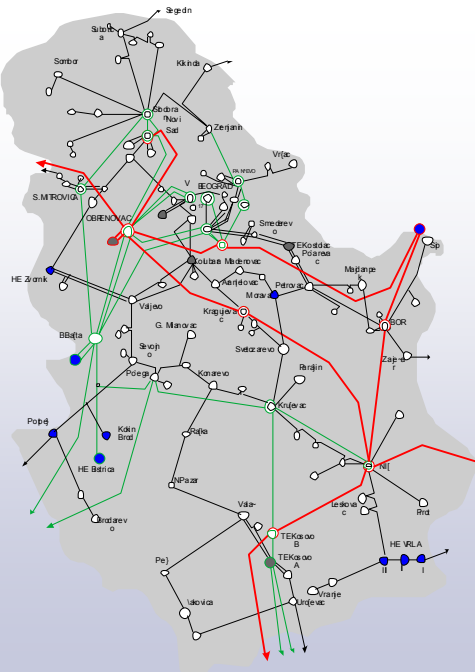
- 220 kV network was given the main contours
- 500 MW of hydro power plants was connected to 220 kV network
- First units in thermal power plants connected to 220 kV voltage in Kosovo and Metohija
- Start of preparations to introduce 400 kV network



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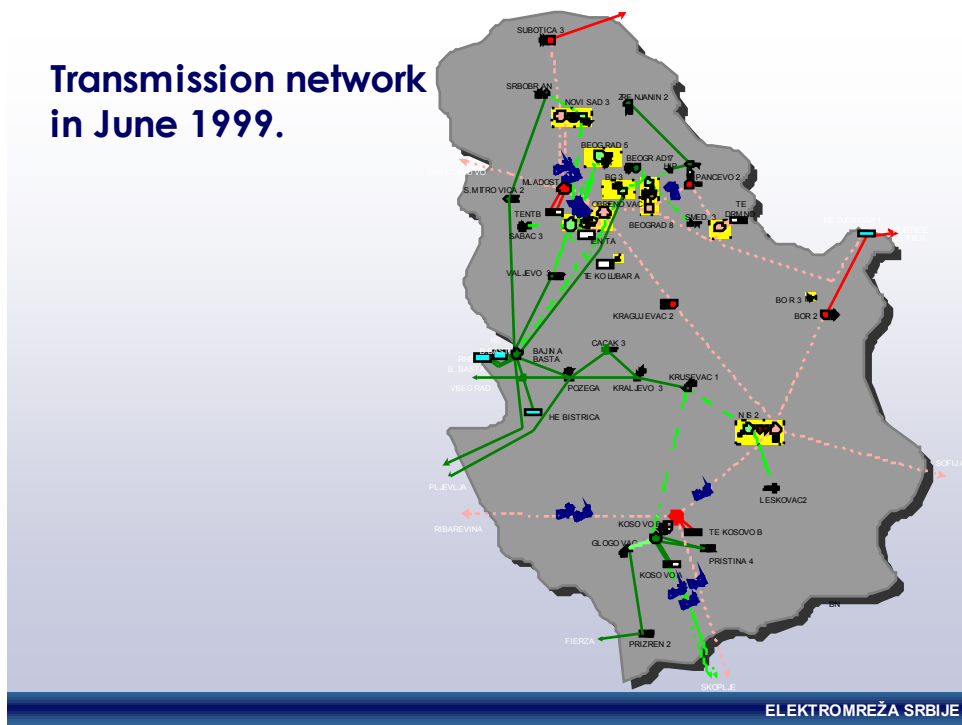
Transmission network in the year 1978

- Continuation of intense development and introduction of 400 kV voltage started in 1970.

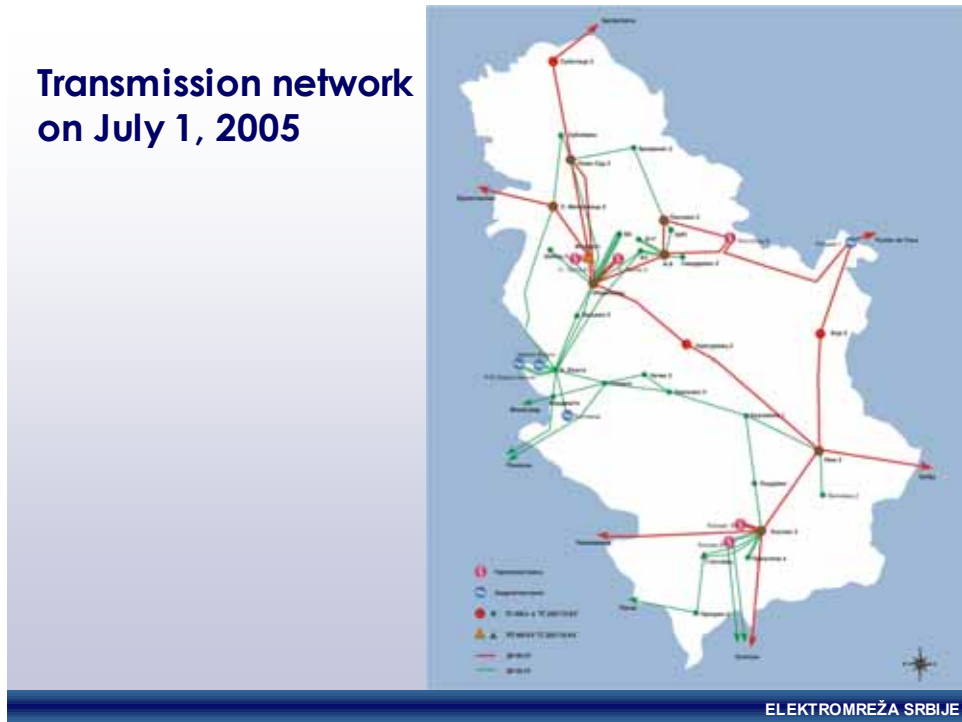


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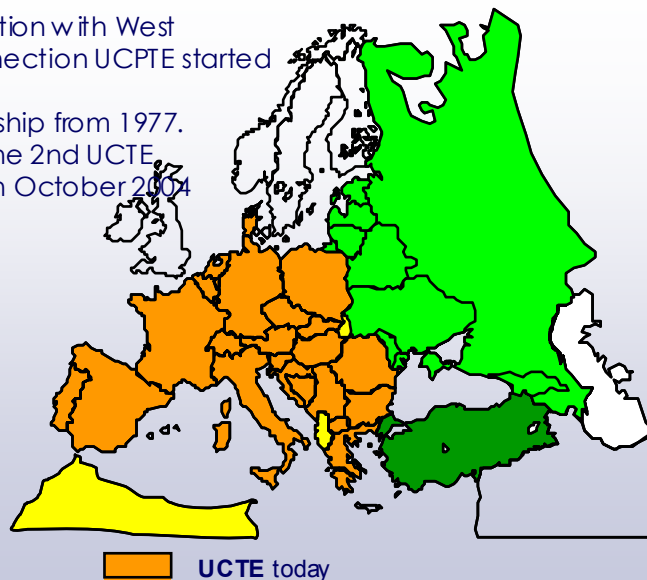
Transmission network
in June 1999.



Transmission network
on July 1, 2005



- Synchronous operation with West European interconnection UCPTe started in the mid seventies
- Full UCPTe membership from 1977.
- Reconnection of the 2nd UCPTe synchronous zone in October 2004



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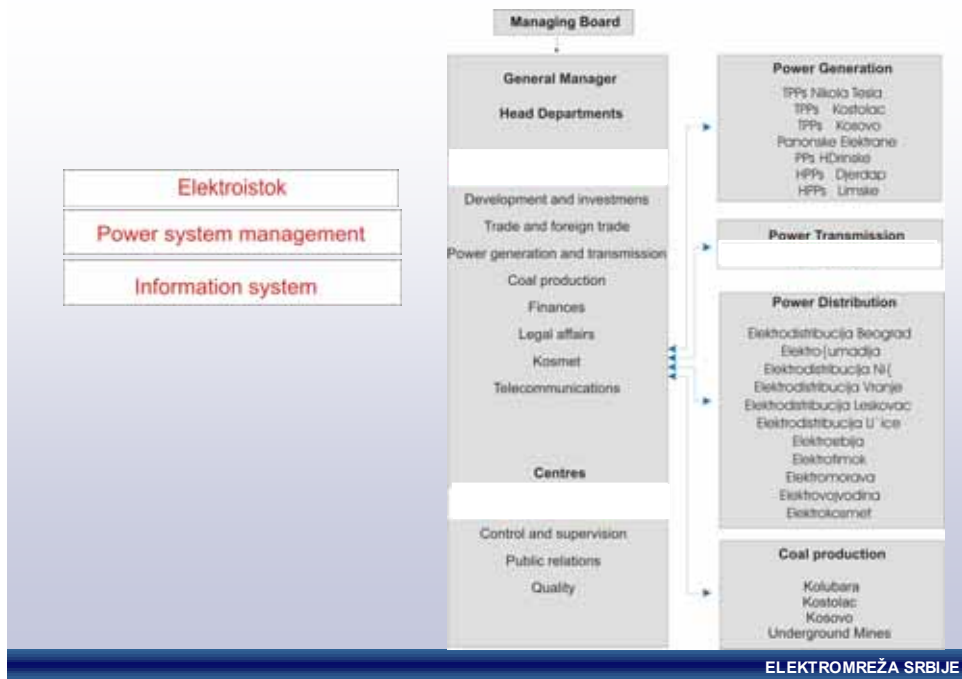
Unbundling of electricity transmission and system operation from PE EPS and establishment of new Public Enterprise Elektromreža Srbije

Property, rights and liabilities from the following parts of PE EPS:

1. PE "Elektroistok" Belgrade
2. Power System Control Department
3. A part of the Center for Integral Information System which was in charge of the technical support of the system control.

were transferred to PE Elektromreža Srbije.

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Foundation

Based upon the Decision of the Government of the Republic of Serbia and according to the Energy Law, the Public Enterprise Elektromreža Srbije started to work **on 1st of July, 2005**

Dragan Vignjević, dipl.el.eng.
was appointed to be the general manager

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Basic activities

- Transmission of electricity
- System operation
- Organization of electricity market

Elektromreža Srbije is Serbian Transmission System and Market Operator (TSMO)

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Objectives

- Provision of high level of security of Serbian transmission system
- Sustainable development of transmission capacities and their technical-technological integration into single system
- Transparent and non-discriminatory cross-border access
- Technological enhancement of the power system control

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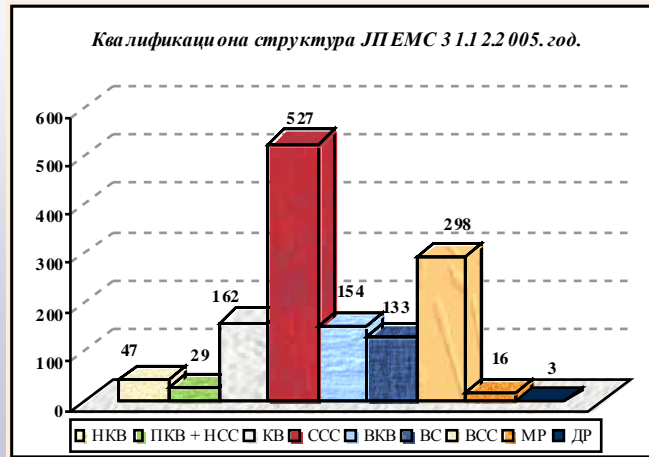
Objectives

- Increased efficiency in maintenance of transmission capacities
- Economic-financial consolidation accompanied by efficient and cost-effective operation
- Maintaining the influential position in the region
- Joining the process of establishment of the regional electricity market in the South East Europe

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Structure of employees

- significant share of employees with high education level



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Organizational structure of EMS



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Transmission Division



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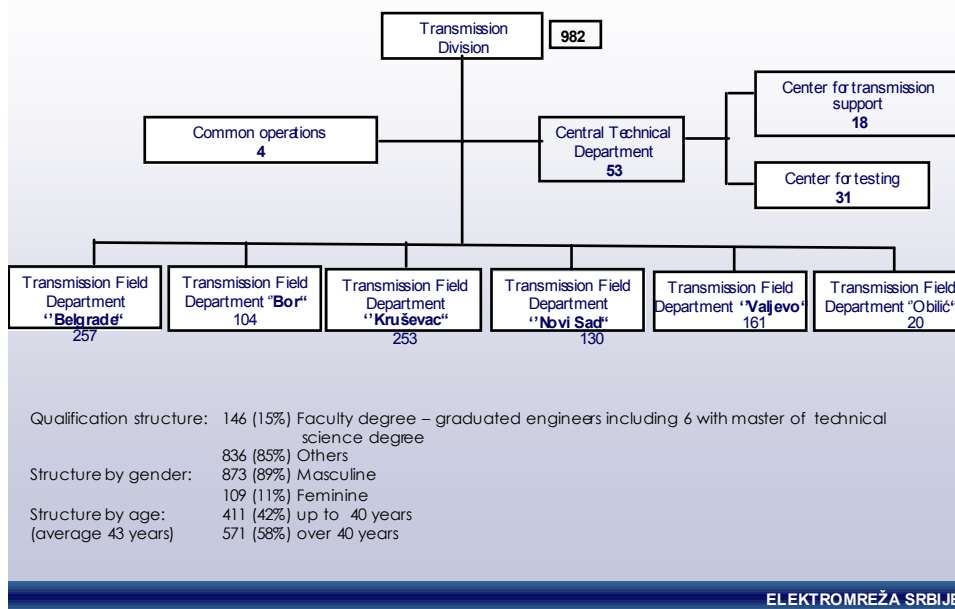
400kV and 220 kV transmission network of Serbia



Tasks

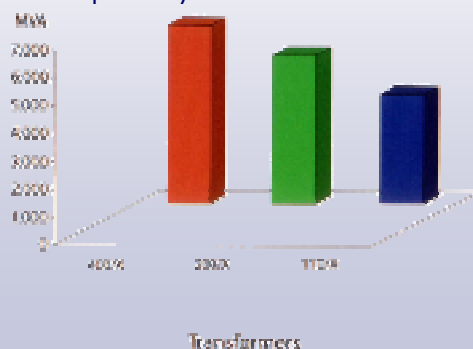
- Maintenance of transmission capacities
- Testing of HV equipment, relay protection system of transmission (and generation) capacities and electricity meters
- Technical check of transmission facilities and putting into operation of new transmission capacities (trial operation)
- Consulting services in the field of design and construction of transmission facilities

Employees and qualification structure



Transmission system facilities Substations

- **95** high voltage substations
- **182** transformers
- Total installed capacity **17 758** MVA.

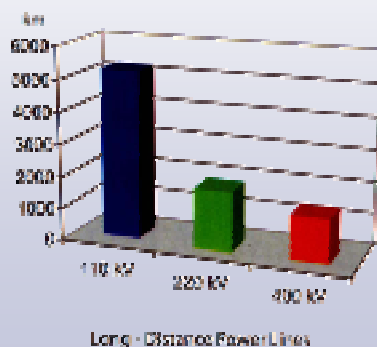


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Transmission system facilities

Power Lines

- Total length of power lines of various voltage levels is **9 850** kilometers.



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Regional organization

- The electricity transmission is carried out in the transmission field departments:

Belgrade
Bor
Valjevo
Kruševac
Novi Sad
Obilić



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System Operation Division



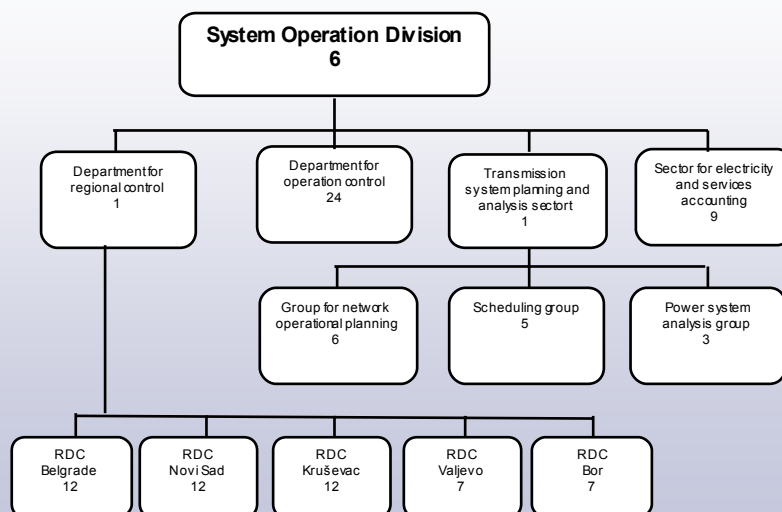
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Main tasks

- Ensuring the secure operation of the electric power system of Serbia
- Operational control of the electric power system of Serbia
- Synchronous operation of the electric power system of Serbia and neighbouring electric power systems
- Provision of system services

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Organizational structure



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- National Control Center in Belgrade
- Six regional dispatch centres



Staff and qualifications

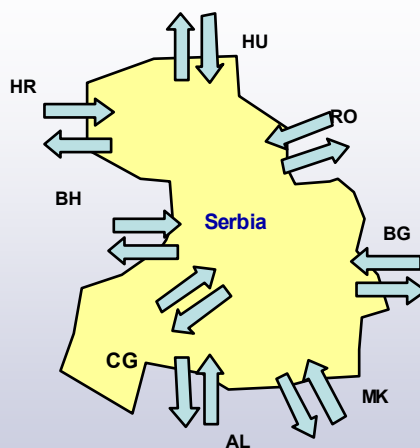
- Total number of employees is 104.
- Qualification structure– 52 graduated el. eng., 3 economists, 16 engineers,...
- The average age of the employees is *40,9 years*
- Permanent need to implement new know-how and technologies
- New systems/working tools (for power system control - SCADA/EMS, for remote acquisition and accounting of metering data - SRAAMD,...)

New jobs resulting from the liberalization of the electricity market and international activities

- Calculation of cross border transfer capacities towards neighbouring systems
- Congestion management
- Allocation of cross border transfer capacities (www.ems.co.yu/atc_sr.htm)
- Compensation of transits through Inter-TSO Compensation (ITC) mechanism
- Membership in various international organizations (UCTE, (S)ETSO, SUDEL, EURELECTRIC)
- Secure system operation – prerequisite for the functioning of both internal market and the regional market in South East Europe

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Central position in the region



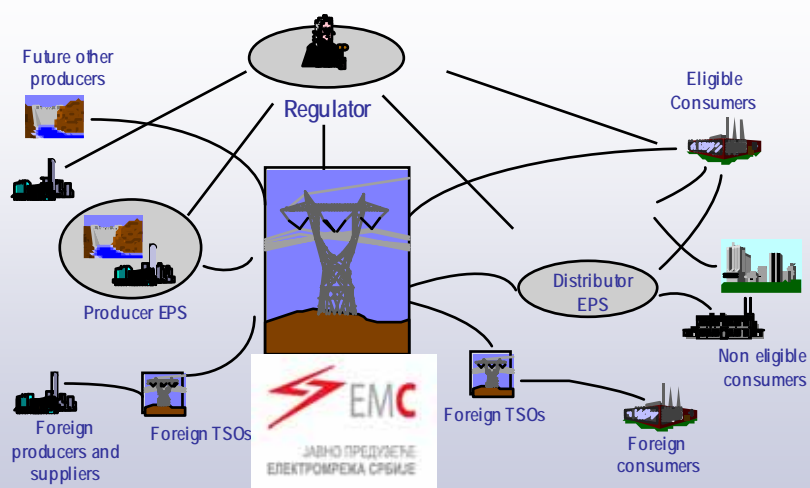
Secure system operation – prerequisite for the functioning of both internal market and the regional market in South East Europe

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JAVNO PREDUZETE
ELEKTROMREZA SRBIJE

Market Division



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Tasks

- Market development (definition of a model for electricity market in Serbia and drawing up the market rules – Market Code)
- Implementation of the project for Market Management System
- Administrative-accounting jobs related to the electricity market in Serbia.

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There are two units within the Division:

- Group for electricity market development
- Group for commercial scheduling

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New services related to the electricity market

- Connection to the transmission system of all new customers clients (power plants, new distribution facilities and direct consumers)
- Access to the transmission system (use of grid)
- Access to interconnection lines

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New services related to the electricity market

- Providing of the system services (primary and secondary control, voltage and reactive power regulation, black-start capabilities and purchase of energy to cover losses in the transmission system).
- Balance responsibility service for all market participants
- Balancing market (tertiary control)

For all services EMS and network users will conclude corresponding contracts.

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Development of transmission network



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- Delay in investments and destruction of transmission facilities in the nineties
- Rehabilitation of the existing and construction of new transmission facilities is prerequisite for both internal and regional electricity market opening
- The largest investments in transmission network in Europe today and in the near future are in Serbia

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Contracted facilities to be financed by EBRD Loan of 60 mill. EUR until 2008

Construction of new substations 400/110 kV

- Beograd 20
- Jagodina 4
- Sombor 3

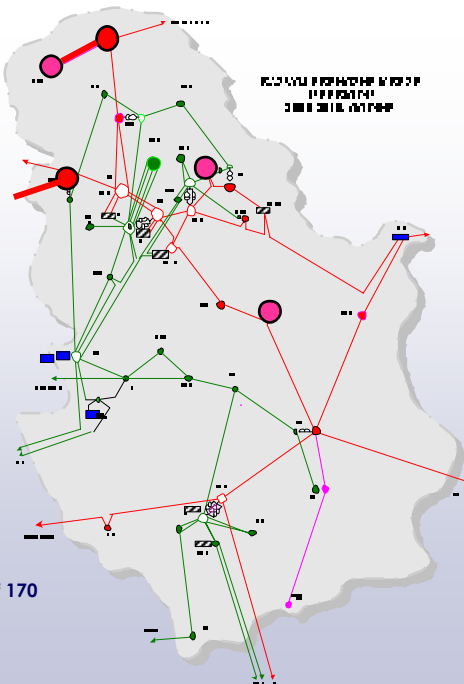
Upgrade of existing substations

- Sremska Mitrovica 2
- Subotica 3

Construction of new power lines 400 kV

- DV 400 kV Sombor 3 – Subotica 3
- DV 400 kV Sremska Mitrovica 2 – Ugljevik
- Connection SS Beograd 20 & Jagodina 4

Rehabilitation of 100 kV power lines in total length of 170 km

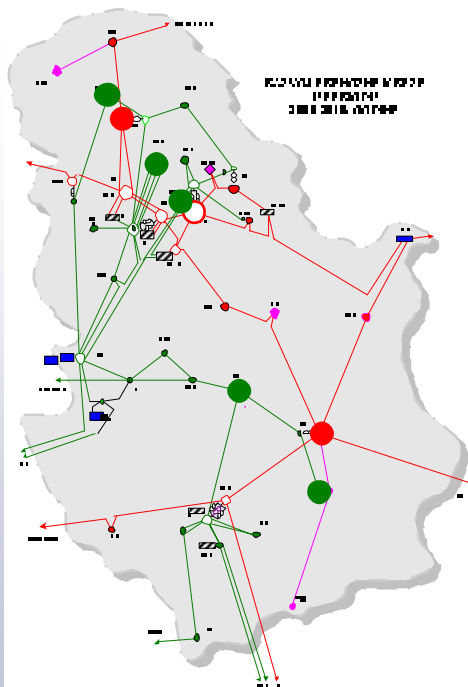


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Facilities financed out of the EIB Loan - 59 mill. EUR until 2010

Rehabilitation of substations

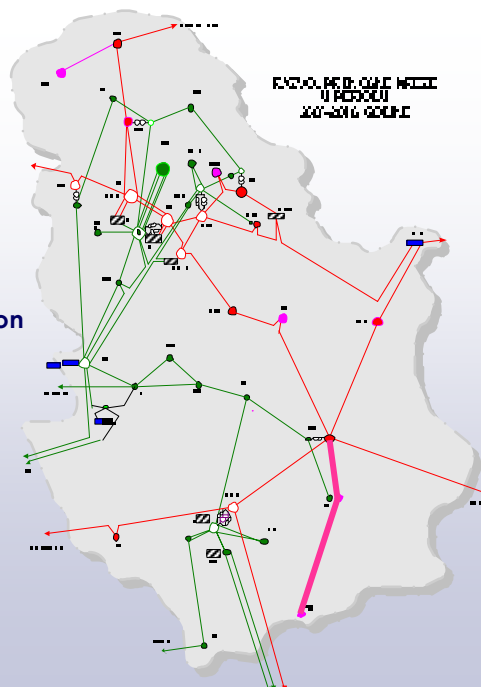
- 400/220 kV Beograd 8
- 400/220/110 kV N. Sad 3
- 400/220/110 kV Niš 2
- 220/110 kV Beograd 5
- 220/110 kV Beograd 3
- 220/110 kV Leskovac 2
- 220/110 kV Kruševac 1
- 220/110 kV Srbobran



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New interconnection line financed by EAR grant - 21 mill. EUR until 2010

- Construction of new interconnection line 400kV Nis 2 - Skopje 5



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National Dispatching Centre Rehabilitation project to be financed by the Swiss grant - 15,3 mill. CHF until 2007

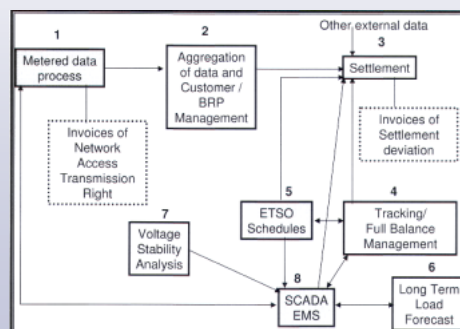
- New control system
- SCADA/EMS
- System for remote acquisition and accounting of metering data
- Laboratory for testing high voltage measuring and power transformers
- Highly precise meters
- ...



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Project for Market Management System to be financed by EAR grant – until 2007

- Balance responsible party / Customers management
- Settlement
- Balancing Tracking
- Full balance management
- Long term load forecast
- ...



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Telecommunication system financed out of EBRD Loan EIB Loan of 31 mill. EUR

New telecommunication system

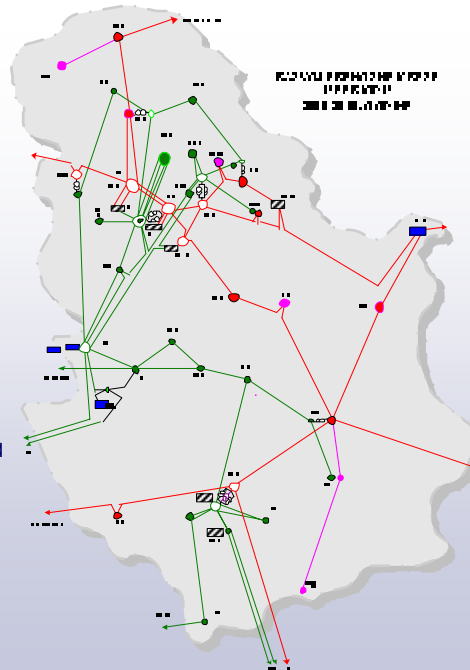
- Installation of OPGW in power lines 400kV, 220kV and 100 kV, and connection to neighbouring systems
- Installation of terminal equipment



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Transmission System Development Plans until 2010

- New interconnection line 400kV Serbia - Romania
- New substation 400/110kV Vranje 4
- New substation 220/110kV Bistrica
- Upgrade of substation 220/110kV Smederevo 3



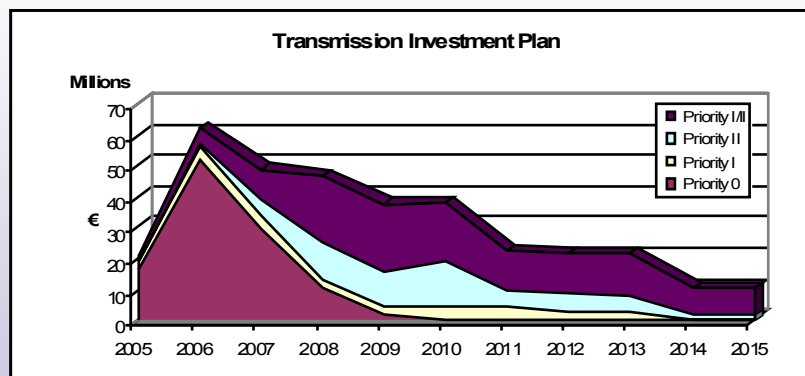
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EMS in 2015

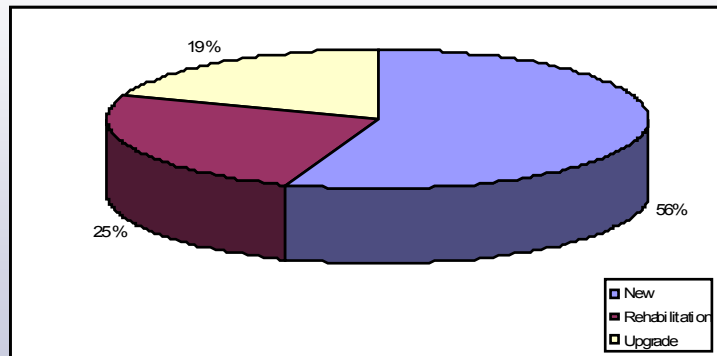
For the period 2006 – 2015, investment of EUR 350 million is planned for improvement of performances of the system, taking of a leading role in the region of the South East Europe and investment in the environmental projects.



Investments as per priorities and years



Investments as per structure until 2015



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Necessary conditions to realize the mission of Elektromreža Srbije

- Market conditions and adequate economic price of transmission and system operation service
- Realization of the investment program
- Fulfillment of obligations undertaken by signing the Treaty on establishment of Energy Community in South East Europe – implementation of EU directives and regulations
- Improvement of the internal organization, efficient and cost-effective operation
- Human resources management
- Improvement of the employees standard of living (raise of salaries, housing credits, better work conditions)

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Nikola Tesla
1856 – 1943

**Celebration of 150th
anniversary**



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