Energy system of Moldova

State Enterprise MOLDELECTRICA
Voltage levels: 400 kV, 330 kV, 110 kV

Interstate interconnectors:
- 7 transmission lines of 330 kV
- 11 transmission lines of 110 kV between Ukraine and Moldova
- 1 transmission line of 400 kV
- 4 transmission lines of 110 kV between Moldova and Romania

Asynchronous operation with ENTSO-E (work is possible in island mode)
Synchronous operation with IPS/UPS

Installed capacity – 3018 MW (actual capacity is about 2198 MW)

The capacity of the right bank part of the power system amounts to 408.4 MW (out of which CHP - 326.4 MW)
- CHP-2 Chisinau – 240 MW
- CHP-1 Chisinau – 66 MW
- CHP Beltsy – 24 MW
- HPP Kostesht – 16 MW
- Low capacity generating sources – 66 MW

The capacity of the left bank part of the power system amounts to 2606 MW (actual capacity is about 1786 MW)
- Moldavian TPP – 2520 MW (actual capacity – about 1700 MW)
- Dubossary HPP – 48 MW
- Low capacity generating sources – 32 MW
Moldova - Ukraine
- 7 interconnectors of 330 kV
  - Beltsy – Dniester HPP
  - Rybnitsa – Kotovsk 1
  - Rybnitsa – Kotovsk 2
  - Moldavian TPP – Kotovsk
  - Moldavian TPP – Usatovo
  - Moldavian TPP - Novoodesskaya
  - Moldavian TPP - Artsyz

- 11 interconnectors of 110 kV
  - Larga – Nelipovtsi
  - BSZ - Dnestrovskaya HPP
  - Okniza – Shahty
  - Otachi – Nemiya
  - Soroka – Porogy
  - Vesilevka – Krasnye okna
  - Moldavian TPP – Starokozache
  - Moldavian TPP – Belyaevka
  - Moldavian TPP – Razdelnaya
  - Vulcanesti – Bolgrad 1
  - Vulcanesti – Bolgrad 2

Moldova – Romania
- 1 interconnector of 400 kV
  - Vulcanesti- Isakcha
- 4 interconnectors of 110 kV
  - Kosteshskaya HPP- Stynka
  - Ungheni – Tsutsora
  - Choara – Hush
  - Gotesht - Fechiu
Control is performed on the basis of bilateral contracts with distribution companies for electricity transmission and dispatching control.

Operational cooperation with Transdniestrian enterprises is based on the bilateral agreement with the State Unitary Enterprise “GC Dniester Energo”.

Cooperation with Ukraine is based on the technical agreement on ensuring parallel operation of Ukrainian Interconnected Power System and Moldavian grid.

Cooperation with Romania is based on the Conventions on the operation of interstate transmission lines (four 110 kV transmission lines and one 400 kV transmission line).

The highest level of control is the dispatcher of the Central Dispatch Service of SE “Moldelectrica” who interacts with regional dispatchers of the subsidiaries of SE “Moldelectrica”, dispatchers of other grid companies, and shift engineers of power plants.

SE “Moldelectrica” owns 400, 330, 110 and 35 kV networks of Moldavian energy grid (only in the northern part) in the right bank part of the Dniester river.

110 kV network nearby Chisinau belongs to Union Fenosa company.

In the left bank area, the high-voltage network belongs to the State Unitary Enterprise “GC Dniester Energo”.
In March 2006 a joint application of Ukraine and Moldova was submitted through the Romanian system operator Transelectrica for the synchronous connection to the UCTE (since 2009 - ENTSO-E) as a unit.

For several years the experts of SE "Moldelectrica", NEC "Ukrenenergo", CNTEE "Transelectrica" together with the Ministry of Economy of the Republic of Moldova and the Ministry of Economy of Romania have been preparing documents for the financing of a feasibility study for connection of the Moldavian and Ukrainian energy systems to ENTSO-E. The final version of the Contract of financing of feasibility study was signed in October 2013.

The main partners of the Ministry of Economy of the Republic of Moldova in this project are the Ministry of Economy and Trade of Romania and the Ministry of Energy and Coal Industry of Ukraine.

With due regard to the provisions of the Contract on financing the parties started discussions of the draft Service Agreement which will be concluded between the Ministry of Economy of the Republic of Moldova and the Consortium of ENTSO-E.

The final working meeting dedicated to this subject held on December 20, 2013 was attended by representatives of the Consortium of ENTSO-E, the Ministry of Economy and Trade of the Romania, the Ministry of Economy of the Republic of Moldova, CNTEE "Transelectrica", SE "Moldelectrica" and NEC "Ukrenenergo".

Conclusion of the Service Agreement will allow the development of feasibility study for connecting the Moldavian and Ukrainian energy systems to ENTSO-E, in which the feasibility of implementation of such project will be determined by the possibility of implementing this project, as well as all measures that Moldavian and Ukrainian energy systems will have to undertake to get connected to ENTSO-E.
Development strategy of transmission network

- **2 interconnectors of 400 kV**
  - Beltsy – Suchava
  - Streshen – Iași

- **5 interconnectors of 330 kV**
  - Beltsy – Dniester HPP
  - Beltsy - Streshen
  - Streshen - Chisinau
  - Beltsy - Rybnitsa
  - Streshen - Rybnitsa


- **Sufficient connection capacity between Moldova and Romania**
  Currently the interconnector Moldova-Romania consists of one transmission line of 400 kV Vulcanesti–Isakcha. To increase capacity and to ensure reliability it is necessary to establish new connections with Romania which will allow importing electricity from Romania in a reliable way and contributing to the diversification of electricity market.
  To achieve this goal the national development strategy envisages establishing the required minimum of two additional connections – Beltsy - Suchava of 400 kV and Streshen – Iasi of 400 kV.

- **Enhancing connection capacity between Moldova and Ukraine**
  Electricity imports from the Ukrainian system has technical limitations and depends on the demand level of the Odessa region of Ukraine and on the operating mode of the Moldavian TPP.
  To increase Moldova-Ukraine transmission capacity the national strategy envisages a project of the second transmission line Beltsy – Dniester HPP.

- **Development of internal transmission network**
  The internal transmission network capacity of 330 kV requires modernisation and development in order to avoid any limitations. The national strategy includes projects of duplication of existing corridors and the development of cross-connection.
• **Modernization of power equipment**
Currently SE “Moldelectrica” is facing a problem of depreciation and obsolescence of the equipment. Some equipment has been in operation for over 40 years. At present 60-70% of the network equipment operated by “Moldelectrica” are depreciated and obsolete.

• **First stage of modernisation** of depreciated equipment was conducted within the implementation of the 2nd Energy project. The project was funded by the World Bank. Within this stage the following has been implemented:
  - modernisation of equipment of 330 kV substations and partial reconstruction of 110 kV substations and high voltage transmission lines;
  - installation of the new automatic system for commercial measurement of power consumption;
  - installation of the new SCADA system.

• **Second stage of modernisation** of equipment involves:
  - replacement of transformers at certain substations of 330 kV and 110 kV;
  - replacement of switchgear at certain substations of 110 kV;
  - reconstruction of 400 kV switchyard at Vulcanesti substation and 110 kV switchyard at three substations of 110 kV;
  - modernisation of 110 kV transmission lines of total length of 128 km.

Works of the second stage of equipment reconstruction and modernisation will be financed by the EBRD loan (20 mln.USD), EIB (17 mln. Euros) and European funds (grant of 8 mln. Euros)

• **400 kV transmission line Beltsy-Suchava**
Feasibility study and environment impact assessment were completed. Both studies were funded by the European Bank for Reconstruction and Development. Next steps are design and construction.
Over 2012-2013 technical specifications for connection to the grid of RES power stations of total contracted installed capacity 1030 MV were issued.

Last year three small RES power plants were put into operation in Moldova.

These are:
- 1.1 MW wind power plant near Bratushany village;
- 320 kW power station on municipal solid waste landfill farm at Tsyntsareny village;
- 2 MW power station using biogas produced from molded scraps of sugar production in Drokia.

Thank you!