Compania Națională de Transport al Energiei Electrice
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"RET Development Plan in 2020 – 2029 – main coordinates"

1. Introduction

In accordance with the competences and attributions established in the Electricity and Natural Gas Law 123/2012 with later amendments and additions and with the Terms associated to Licence 161 for provision of electricity transmission services, system services and balancing market administration, with later amendments and additions, CNTEE Transelectrica SA performs planning activities regarding the development of the Electricity Transmission Grid (RET).

Every two years CNTEE Transelectrica SA elaborates a RET development Plan for the following ten successive years, a document submitted to ANRE's approval.

Such biennial elaboration of the RET Development Plan is in agreement with the obligation of CNTEE Transelectrica SA to participate as member in the association of European TSO-s ENTSO-E, and in the elaboration by it, every two years of the European Development Plan *Ten Years Network Development Plan* (TYNDP).

In accordance with article 10 of the Procedure on the foundation and approval criteria of the investment plans of the transmission and system operator and of the electricity distribution operators approved by Order 204/2019 of ANRE president:

(1) TSO carries out the following prospective analyses of RET in the short run – for the following 5 years, namely the long term – for the next 10 years, which constitute the basis of the development plan:

- *The current stage and future development of electricity consumption, the structure and capacity of generation sources, including electricity imports and exports, taking into consideration the development forecasts for cross-border exchange capacities* – Chapter 9;
- *RET analysis depending on the age and technical condition of its elements, with details by geographical areas, voltage levels and networks elements* – Chapter 8, Annex E3;
- *Assessing the loading degree of network elements and the grid behaviour when the following terms are satisfied: the safety principle (N-1), the steady-state stability and transient stability conditions in order to detect the critical network areas and the necessary work to increase operational safety, optimise and render it efficient* – Chapter 5.4, Chapter 10;

- *Analysing the power losses in the characteristic segments of the load curve, detecting the critical areas and elements and establishing the measures necessary to reduce them* – Chapters 5.6, 10.4, 14.3.3;

- *Assessing the growth potential of energy efficiency within RET, finding measures to improve its energy efficiency, establishing the implementation calendar of such measures* - Chapter 12;

- *Examining the performance level of services according to the indicators provided in specific applicable regulations, detecting the factors of significant influence over it, establishing the necessary measures to improve service performance and to acquire control over the main influencing factors* – Chapters 5.5, 5.9, 8, 11, 14;

- *Analysing the adequacy of the peak load system in the short-, mid- and long terms by means of methods taking into account the structure of generating capacities and the uncertainty degree induced by the share of available power of generating capacities from renewable sources within the total available power in the entire SEN* – Chapter 9;

- *Assessment of RET flexibility* – Chapters 5.8, 10.6, 10.9 ;

- *Finding out the RET areas and elements which require investments consisting in modernisation or refurbishment* – Chapters 8, 11, 14;

- *Finding out the network areas where development and extension are necessary* – Chapters 10, 14;

- *Providing the prioritisation of investments by detailing the priority criteria and the kind of analyses used in the execution of chronological development of forecasted investments* – Chapters 8, 10, 14;

- *Evaluating the total value of investments and the level of annual investment expenses, and detecting the financing sources (one's own funds, borrowed sources, financial contributions, revenues from the allocation of cross-border interconnection capacities)* – Chapters 14, 15, 16;

- *Finding out, founding and value estimation of benefits targeted by making the planned investments (e.g. improving the operational safety indicators of RET, the performance indicators, reducing operational and maintenance expenses, reducing the CPT, connecting new users, complying with legal obligations, etc.)* – Chapters 2, 14.5, feasibility studies;

- *Updating the stage of interconnection projects in correlation with the European list of projects of common interest and with the targets assumed at national level with respect to the interconnection degree, European Union-wide* – Chapters 2, 14, Annex F3;

- *Assessing the impact of planned investment expenses over regulated tariffs* – Chapter 16.3*;*

- *Correlating the 10 years' development plan of the electricity transmission network with similar plans of electricity transmission networks of neighbouring countries as resulting from the cooperation with neighbour TSO-s, while pointing out the obligations devolving on TSO-s and the positions from the 10 years' development plan of the electricity transmission networks involved in such correlations / cooperations* – Chapters 2, 14;

- *Comparative situations showing the changes from the previous edition of the ANRE-approved plan, with documented justification of each changed objective* – Chapter 14, Annex F3;

- *Monitoring report for the achievement of investments included in the 10 years' development plan of the electricity transmission network approved by ANRE, providing also a value estimation of the delay impact or non-achievement of investments included in the previous edition of the development plan* – Annex F3, Chapter 10.1.9;

- *Plan of maintenance work necessary to provide operational safety of RET or compliance with legal obligations (laws, licence terms, technical norms), also detailing the mode of operation (using one's own teams or third parties); estimating the maintenance costs and the maintenance programme for the network, elaborated in accordance with the provisions of the maintenance regulation* – Chapter 11;

- *Analysis of the measures and plans meant to provide cyber security of IT systems* – Chapter 14.3.5.

(2) The 10 years' development plan of the electricity transmission network includes the investments resulting as necessary within RET during the prospective 10 years' period, after the analyses provided in para (1); the plan contains an estimation of the achievement term, the total value and annual investment expenses for every investment project.

The Chapter or annex from the Development Plan providing the results of such analysis was mentioned above for each analysis requested according to the Procedure on the foundation and approval criteria of the investment plans of the transmission and system operator and of the electricity distribution operators approved by Order 204/2019 of ANRE president.

Following all these analyses the projects were obtained, which were introduced in the Development Plan of RET. A great part of such projects was included in the previous approved editions of the Development Plan; the current edition provides the stage of projects and reconfirms their need. A few of the projects included in previous editions have been excluded and they will be resumed in the future.

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2. Comparative analysis of investment projects included in this edition of the 2020 Development Plan compared to the previous edition of 2018

During the time interval elapsed since the approval of the previous Development Plan the following projects were completed:

❖ **Refurbishment / modernisation of RET:**

- Refurbishing the 220/ 110/20 kV substation Campia Turzii;
- Refurbishing the 220 kV substation Otelarie Hunedoara;
- Upgrading the 110 kV and 20 kV substations Suceava;
- Upgrading the 400/110/10 kV substation Cluj Est;
- Refurbishing the 400/220/110/20 kV substation Bradu;
- Refurbishing the 220/110/20 kV substation Turnu Severin Est;
- Refurbishing the substation Isaccea, stage I (replacing the shunt reactors, associated bays and the 400 kV OHL bay Stupina);
- Upgrading the command-control-protection system of the 220/110/20 kV substation Sardanesti;
- Replacing the 200 MVA AT3 from the 220/110/20 kV substation Targoviste;
- Replacing autotransformers (AT) and transformers in substations - stage 2 - step 1:
  - Replacing the 200 MVA AT2 in the 220/110/20 kV substation Ungheni
  - Replacing the 200 MVA AT2 in the 220/110/20 kV substation Raureni
  - Replacing the 200 MVA AT2 in the 220/110/20 kV substation Arefu
  - Replacing the 25 MVA T2 in the 220/110/20 kV substation Gradiste
  - Replacing the 25 MVA T1 in the 220/110/20 kV substation Gheorgheni
  - Replacing the 200 MVA AT1 & AT2 in the 220/110 kV substation Craiova Nord
  - Replacing the 200 MVA AT2 in the 220/110 kV substation Pestis
  - Replacing the 16 MVA T1 and 10 MVA T2 in the 220/110/20 kV substation Vetis
  - Replacing the 16 MVA T12 in the 220/110/20 kV substation Ungheni
  - Replacing the 200 MVA AT2 Gheorghieni in the 220/110/20 kV substation Gheorghieni
- Replacing autotransformers (AT) and transformers in substations - stage 2 - step 2:
  - Replacing the 110/20 kV T4 Suceava
  - Replacing the T1 & T2 110/20 kV FAI
  - Replacing the 200 MVA, 220/110 kV AT1 Alba Iulia
- Replacing the 100 MVAr 400 kV BC in substations Arad, Bradu, Bucharest South

❖ **Increasing the interconnection capacity and integrating the RES output**:

- Extending the 400 kV substations Portile de Fier
- The 400 kV OHL Resita-Pancevo; commercial operation will begin when the 400 kV substation Resita has been completed;

In the current edition of the Development Plan were introduced the following new investment projects:

❖ **Refurbishment / modernisation of RET:**

- Replacing the 220/110 kV AT 1 Arefu, 220/110 kV AT Stuparei, the 400/110 kV T1 & T2 Constanta Nord, the 400/110 kV T2 Smardan, the 110/10 kV T1 & 400/110 kV T7 Cluj Est, the 400/110 kV T4 Draganesti Olt;
- Upgrading the command-control-protection system of the 400 kV substation Gadalin;

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- Upgrading the command-control-protection system of the 400/110/20 kV substation Sibiu Sud;
- Procurement and installation of a 100 MVAr shunt reactor in the 400 kV substation Portile de Fier.

❖ **Safe supply of consumption:**

- Installing a new 220/110 kV 400 MVA autotransformer in the 220/110 kV substation Fundeni (increasing the supply safety of consumers in the north-eastern area of Bucharest City connected in the 220/110/10 kV substation Fundeni);
- Installing a new 400/110 kV 250 MVA transformer in the 400/220/110 kV substation Bucharest Sud (increasing the supply safety of consumers in the southern area of Bucharest City connected in the 400/220/110/10 kV substation Bucharest Sud);
- A 400/110 kV substation in Grozavesti connected by the 400 kV LES to the 400 kV substations Bucharest Sud and Domnesti and two 100 MVAr shunt reacotrs installed at 400 kV in the 400 kV substation Grozavesti;
- The 400/110 kV substation in Fundeni connected also by the new 400 kV OHL Fundeni-Brazi Vest and input into-output from the 400 kV OHL Bucharest Sud-Gura Ialomitei by the 400 kV double circuit OHL and installing a 100 MVAr shunt reactor in the new 400 kV substation;
- Remaking the conductors of the 220 kV axis Urechesti-Tg. Jiu Nord-Paroseni- Baru Mare-Hasdat (necessary to also increase the interconnection capacity).

❖ **Increasing the interconnection capacity:**

- Equipping circuit 2 of the 400 kV OHL Nadab-Bekescsaba;
- The 400 kV OHL Portile de Fier - Djerdap circuit 2 - resulting from the long-term analyses of ENTSO-E; the opportunity will be reanalysed depending on the integration of renewable sources;
- RO-HU interconnection (new 400 kV OHL Oradea-Jozsa, new 400/220 kV AT Rosiori, new 400/220 kV AT Resita, remaking the conductors of the 220 kV axis Urechesti-Tg. Jiu Nord-Paroseni- Baru Mare-Hasdat) resulting from the long-term analyses of ENTSO-E; the opportunity will be reanalysed depending on the integration of renewable sources.

In comparison with the approved edition of the Plan in the current edition the following investment projects have been excluded:

- Refurbishing the 400/110 kV substation Darste – will be introduced in the future editions of the Plan
- Upgrading the command control protection system in the 400/220/110 kV/MV substation Urechesti – will be introduced in the future editions of the Plan
- Upgrading the command control protection system in the 400 kV substation Nadab – will be correlated with the project to endow circuit 2 of the 400 kV OHL Nadab-Bekescsaba
- Upgrading the command control protection system in the 220/110 kV substation Fundeni – to be correlated with the project Increasing the supply safety of consumers in the north-eastern area of Bucharest City connected in the 220/110/10 kV substation Fundeni

- Upgrading the command control protection system in the 400/220/110 kV substation Bucharest Sud – will be correlated with the project Increasing the supply safety of consumers in the southern area of Bucharest City connected in the 400/220/110/10 kV substation Bucharest Sud
- Upgrading the command control protection system in the 220/110 kV substation Turnu Magurele – will be introduced in the future editions of the Plan
- Upgrading the command control protection system in the 220/110/20 kV substation Gheorgheni – will be introduced in the future editions of the Plan

3. Description of RET development projects included in the RET Development Plan for 2020 - 2029

In order to maintain the network adequacy so that it can be properly sized fie corespunzător for electricity transmission of the output forecasted to be generated, imported, exported and transited two categories of invesmtnes have been included in the RET ten years' Development Plan and they will be carried out as follows:

- Refurbishing the existent substations;
- Extending RET by building new electric substations and lines, increasing the transmission capacity of existing lines, extending the existent substations and increasing the transformer capacity of substations.

❖ Refurbishment and modernisation of existent substations

Electric lines and substations providing the national transmission system were in the main built in the 1960-s ÷ 1980-s, with the technological knowledge of such time period.

The actual technical condition of installations has been maintained to date to a proper level both by means of the maintenance plan applied and by a sustained refurbishment and upgrade programme for installations and equipment.

In the following ten years ongoing refurbishment project will be completed and new projects will be initiated, observing the priority based on technical condition and substation importance.

❖ Increasing the exchange capacity on the western interface of Romania:

Taking into account the contribution to the implementation of the European Union's strategic priorities for the trans-European energy infrastructure the European Commission approved the following group of projects in the fourth list of Projects of Common Interest (PCI):

- PCI "Romania–Serbia Group, between Resita and Pancevo", known as "Mid Continental East corridor", which includes the following projects of common interest:
  - The 400 kV double circuit OHL Resita (RO) - Pancevo (Serbia);
  - The 400 kV OHL Portile de Fier-Resita and extending the 220/110 kV substation Resita by building the new 400 kV substation;
  - Converting the 220 kV double circuit OHL Resita-Timisoara-Sacalaz-Arad to 400 kV, including construction of the 400 kV substations Timisoara, Arad & Sacalaz.

These projects will enable eliminating congestions both along E-V at the borders with Hungary and Serbia, and along N-S by enhancing the Portile de Fier-Resita-Timisoara-Arad corridor.

The projects will also enable integrating into SEN the output of the hydropower development from the existing Portile de Fier.

- The 400 kV simple circuit OHL Oradea Sud-Nadab-Bekescsaba, final stage: segment between towers 1-42 (48) of the 400 kV OHL Oradea Sud-Nadab
- Installing a 100 MVAr shunt reactor in the 400 kV substation Portile de Fier
- Equipping circuit 2 of the 400 kV OHL Nadab-Bekescsaba;
- The 400 kV OHL Portile de Fier - Djerdap OHL circuit 2, resulting from the long-term analyses of ENTSO-E; the opportunity will be reanalysed depending on the integration of renewables;
- RO-HU interconnection (new 400 kV OHL Oradea-Jozsa, new 400/220 kV AT Rosiori, new 400/220 kV AT Resita, remaking the conductors of the 220 kV axis Urechesti-Tg. Jiu Nord-Paroseni- Baru Mare-Hasdat) – resulting from the long-term analyses of ENTSO-E; the opportunity will be reanalysed depending on the integration of renewable sources.

❖ **Increasing the exchange capacity on the southern interface of Romania (border with Bulgaria) for power transmission from intermittent renewable sources installed on the Black Sea coast towards consumption and storage centres; here the following network developments are planned:**

Taking into account the significant contribution by increasing the interconnection capacity between Romania and Bulgaria and by enhancing the infrastructure that will sustain power flows transmission between the Black Sea coast and the North Sea coast / the Atlantic Ocean, the European Commission approved the following group of new projects in the fourth list of Projects of Common Interest (PCI):

- PCI "Bulgaria–Romania Group, capacity increase", known as "Black Sea corridor", which includes the following projects of common interest:
  - The 400 kV double circuit OHL (1 c.e) Smardan-Gutinas;
  - The 400 kV double circuits OHL Cernavoda–Stalpu, with input/output circuit in Gura Ialomitei.

❖ **Increasing the exchange capacity on the interface with the Republic of Moldova**:

The general cooperation framework for the asynchronous interconnection of systems from Romania and the Republic of Moldova is regulated by the Memorandum of Understanding signed in 2015 between the Governments of Romania and the Republic of Moldova.

In 2016 the Collaboration Agreement was signed between CNTEE Transelectrica SA and IS Moldelectrica in order to carry out interconnection projects by means of Back to Back substations also mentioned in the Memorandum of Understanding, namely:

- The 400 kV OHL Isaccea (RO)-Vulcanesti (RM) (existing line), the new 400 kV OHL Vulcanesti-Chisinau, Back to Back substation in Vulcanesti;
- The 400 kV simple circuit OHL Suceava (RO)-Balti (RM) and Back to Back substation in Balti;
- The 400 kV simple circuit OHL Iasi (RO)-Ungheni-Straseni (RM) and Back to Back substation in Straseni.

The interconnection project by Back to Back substation in Vulcanesti is the Project of Common Interest found in the list of projects sustained by the Energy Community. The estimated commissioning term is 2024. Work will be necessary on the Romanian territory to install optical fibre on the existing 400 kV electric line Isaccea (RO)-Vulcanesti (MD) to the border, install protections and remote protections in substation Isaccea, integrate the data procured from substation Isaccea for the interconnection line into the frequency-power controller, etc.

The interconnection project by Back to Back substation in Straseni is the most expensive and difficult, because a 400 kV network has to be built in Romania up to Iasi City.

The RET Development Plan includes:

- The 400 kV OHL Suceava-Balti, examined in the context of the synchronous interconnection project of the systems from Ukraine and the Republic of Moldova with the system of Continental Europe.
- The 400 kV simple circuit OHL Gadalin-Suceava will have important contribution to increasing the transmission capacity on the border with the Republic of Moldova.

❖ **Increasing the transmission capacity between the eastern area (especially Dobrogea) and the remaining interconnected power system and system integration of the power generated in this area**

In order to enhance the transmission capacity in south-eastern Romania to the rest of the system several projects were planned to consolidate the transmission network.

- Input/output connection of the 400 kV OHL Stupina-Varna and the 400 kV OHL Rahman-Dobrudja in the 400 kV substation Medgidia Sud;
- Extending the 400/110 kV substation Medgidia Sud and refurbishing the 110 kV substation to increase the breaking capacity of circuit breakers in correlation with the growth of short-circuit current;
- The 400 kV double circuit OHL (1 c.e) Stalpu-Brasov;
- Converting the 220 kV OHL Brazi Vest-Teleajen-Stalpu to 400 kV (built for 400 kV), including the construction of the 400 kV substations Stalpu and Teleajen;
- The 400 kV double circuit OHL (1 c.e) Medgidia Sud-Constanta Nord;
- Remaking the conductors of the 220 kV OHL Stejaru-Gheorghieni-Fantanele;
- Increasing the transmission capacity of 8 km segment of lower cross-section from the 400 kV OHL Bucharest Sud - Pelicanu;
- Increasing the transmission capacity of the 53 km segment of lower cross-section from the 400 kV OHL Cernavoda – Pelicanu;
- Converting the 400 kV OHL Isaccea-Tulcea Vest from simple to double circuit.

❖ **Integrating into SEN the output generated by other power plants**

The following work is scheduled:

- For safe discharge of power from HPP Portile de Fier II an agreement was made with Co. Hidroelectrica SA to discharge at 220 kV by building the 220 kV substation Ostrovul Mare and the 220 kV double circuit OHL, connection Ostrovul Mare into the 220 kV OHL Portile de Fier - Cetate;
- Replacing the 400/400/160 MVA 400/231/22 kV AT3-ATUS-FS from the 400/220 kV substation Portile de Fier;

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- Increasing the operational safety of the network area Arges-Valcea by building a new 400 kV substation Arefu, 400/220 kV 400 MVA 1 AT and connection into the 400 kV OHL Tantareni-Sibiu Sud by means of a 400 kV double circuit OHL of about 0.05 km.

❖ **Safe supply of consumption from deficit areas**

- Installing the second 400/110 kV, 250 MVA transformer in the 400/220/110/20 kV substation Sibiu Sud in order to reserve the only injection from RET in Sibiu area;
- Installing the second 400/220 kV, 400 MVA AT in substation Iernut in order to provide safe consumption in the N-V area of the country since there is not enough installed capacity in the power plants of this region;
- Remaking the conductors of the 220 kV axis Urechesti-Targu Jiu Nord- Paroseni - Baru Mare-Hasdat;
- Increasing the operational safety of the network area Arges-Valcea by building a new 400 kV substation Arefu, 400/220 kV 400 MVA 1 AT and connection into the 400 kV OHL Tantareni-Sibiu Sud by means of a 400 kV double circuit OHL of about 0.05 km (Also mentioned in the SEN integration of output generated from other power plants);
- Installing a new 220/110 kV 400 MVA autotransformer in the 220/110 kV substation Fundeni, increasing the safe supply of consumers in the north-eastern area of Bucharest City connected in the 220/110/10 kV substation Fundeni;
- Installing a new 400/110 kV 250MVA transformer in the 400/220/110 kV substation Bucharest Sud, increasing the safe supply of consumers in the southern area of Bucharest City connected in the 400/220/110/10 kV substation Bucharest Sud;
- The 400/110 kV substation at Grozavesti connected by the 400 kV LES with the 400 kV substations Bucharest Sud and Domnesti and two 100 MVAr shunt reactors installed at 400 kV in the 400 kV substation Grozavesti,
- The 400/110 kV substation at Fundeni connected also by the new 400 kV OHL Fundeni-Brazi Vest and input-output in the 400 kV OHL Bucharest Sud-Gura Ialomitei by the 400 kV double circuit OHL and installing a 100 MVAr shunt reactor in the new 400 kV substation.

❖ **IT, telecommunication and metering projects**

- Replacing the components of the EMS SCADA AREVA system; replacing the hardware components, updating and developing the applications specific to the Balancing Market Platform II DAMAS,
- Metering system also managing the electricity metering data on the wholesale market,
- Management projects for IT and telecommunication systems;

Projects in the RET Development Plan for 2020- 2029 and planning their achievement in time is provided in table 1:

Table 1

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Nr. Crt.	Denumire proiect	Crit. ANRE	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
A	RETEHNOLOGIZAREA RET EXISTENTE											
1	Retehnologizarea staţiei 400/110/20 kV Domneşti	N										
2	Inlocuiri AT şi Trafo în staţii electrice (etapa 2), din care: faza 2 (8 AT 200 MVA; 4 Trafo 16 MVA)	N										
2.1	8 buc. AT 220/110 kV in statiile : Targoviste, Baia Mare 3, Alba Iulia, Cluj Floresti, Ghizdaru, Turnu Magurele, Urechesti, Vetis	N										
2.2	4 buc. Trafo 110/20 kV in statiile : (Suceava, FAI (2 buc.), Oradea Sud	N										
3	Inlocuiri AT şi Trafo în staţii electrice *(etapa 3) 7 AT & 8 T*	N										
3.1	7 AT 220/110 kV in statiile: Gradiste, Suceava, FAI, Dumbrava, Tg. Jiu Nord, Sardanesti, Tihau.	N										
3.2	8 Trafo 110/20 kV in statiile : Tn. Severin Est (2 buc.) , Cluj Floresti (2 Buc.), Salaj, Campia Turzii, Cluj Est, Tg. Jiu Nord.	N										
4	Retehnologizarea staţiei 220 / 110 / 20 kV Ungheni	N										
5	Modernizare statia electrica 220/110/20 kV Arefu	N										
6	Modernizare statia electrica 220/110 kV Raureni	N										
7	Modernizare statia 220 / 110 kV Dumbrava	N										
8	Retehnologizare staţia 400 / 110 / 20 kV Smârdan	N										
9	Retehnologizare staţie 220 / 110 kV Craiova Nord	N										
10	Retehnologizare staţia 220 / 110 / MT kV Baru Mare	N										
11	Retehnologizare staţia 220 / 110 kV Iaz	N										
12	Retehnologizare staţia 220 / 110 kV Hăşdat	N										
13	Retehnologizare staţia 220 kV Oţelarie Hunedoara	N										
14	Retehnologizare staţia 220 / 110 kV Fileşti	N										
15	Modernizare statia 400 (220) / 110 / 20 kV Munteni	N										
16	Proiect Pilot - Retehnologizare staţia 220/110/20 kV Alba Iulia in concept de statie digitala	N										
17	Retehnologizare staţia Medgidia Sud 110 kV	N										
18	Modernizarea statiilor 110 kV Bacau Sud si Roman Nord aferente axului 400 kV Moldova	N										
19	Retehnologizarea staţiei 400 kV Isaccea *(etapa II - retehnologizare statie 400 kV)*	N										
20	Retehnologizarea statiei electrice de transformare 400/110 kV Pelicanu	N										
21	Modernizarea instalațiilor de 110 și 400 (220) kV din stația Focșani Vest	N										
22	Modernizare sistem de comandă-control-protecţie-metering 220 kV, 110 kV în staţia 220/110/20 kV si retehnologizarea medie tensiune şi servicii interne c.c. şi c.a. în staţia 220/110/20 kV Ghizdaru	N										
23	Modernizare sistem comanda-control-protectie si integrare in CTSI a statiei Draganesti-Olt	N										
24	Modernizare sistem comanda-control-protectie si integrare in CTSI a statiei Gradiste	N										
25	Modernizare staţia 220/110/20 kV Vetiş - echipament primar	N										
26	Modernizare staţia 220/110/20 kV Fântânele	N										
27	Modernizare statie 220/110 kV Calafat	N										
28	Modernizare SCADA in statia 400/110/20 kV Oradea Sud	N										
29	Modernizare sistem de comanda control protectie in statia 400/220 kV Rosiori	N										
30	Modernizare sistem de comanda control protectie in statia 220/110/20 kV Salaj	N										
31	Modernizare sistem de comanda control protectie in statia 220/110 kV Baia Mare 3	N										
32	Modernizare sistem de comanda control protectie in statia 220/110 kV Cluj Floresti	N										
33	Modernizare sistem de comanda control protectie in statia 400 kV Tantareni	N										
34	Modernizare sistem de comanda control protectie in statia 220/110 kV Paroseni	N										
35	Modernizare sistem de comanda control protectie in statia 220/110 kV Pestis	N										
36	Modernizare sistem de comanda control protectie in statia 400 kV Calea Aradului	N										
37	Modernizare sistem de comanda control protectie in statia 400/220/110 kV Mintia	N										
38	Modernizare sistem de comanda control protectie in statia 220/110/20kV Targoviste	N										

39	Modernizare sistem de comanda control protectie in statia 400 kV Cernavoda	N											
40	Modernizare sistem de comanda control protectie in statia 400/110/20 kV Sibiu Sud	N											
41	Modernizare electroalimentare la sediile UNO DEN	N											
42	Instalarea a două mijloace moderne de compensare a puterii reactive în stațiile 400/220/110/20 kV Sibiu Sud și 400/220/110/20 kV Bradu	N											
43	Celule mobile de 110 kV, 220 kV si 400 kV	N											
44	Inlocuire 3 unitati BC 100 MVAR 400 kV in statiile Arad, Bradu si Bucuresti Sud.	N											
45	Achizitia si montajul a 21 sisteme de monitorizare pentru unitatile de transformare din statiile CNTEE Transelectrica	N											
46	Celule mobile de 400 kV pt. BC în stațiile 400kV Bradu și Sibiu Sud	N											
47	Inlocuire AT Stuparei 220/110kV	N											
48	Inlocuire AT1 Arefu 220/110kV	N											
49	Inlocuire Transformator nr. 4 - 250 MVA, 400/110 kV in statia 400/110 KV Draganesti Olt	N											
50	Inlocuire Trafo 1 si Trafo 7 statia Cluj Est	N											
51	Modernizare sistem de comanda control protectie in statia 400 kV Gadalin	N											
52	Inlocuire Trafo 2 400/110kV statia Smardan	N											
53	Inlocuire trafo T1 si T2 400/110kV Constanta Nord	N											
54	Achizitia si montajul unei bobine de compensare 100MVAr in statia Portile de Fier 400kV	N											
55	Optimizarea funcționării LEA 400 kV existente în SEN folosite în interconexiune, pentru evacuare putere din CNE Cernavodă și centralele de energie regenerabilă din Dobrogea, prin montarea de sisteme de monitorizare on-line	N											
B	ALTE INVESTIŢII LA NIVEL DE SUCURSALE ŞI EXECUTIV (planificate anual)	N											
C	SIGURANŢA ALIMENTĂRII CONSUMULUI												
1	Montare trafo T3 - 250 MVA (400 / 110 kV) în staţia 400/110 kV Sibiu Sud	E											
2	AT2 Iernut - 400 MVA, 400/220 kV Montare AT2 400 MVA, 400/231/22 kV precum şi a celulelor aferente în staţia Iernut şi modernizarea sistemului de comandă control al statiei 400/220/110/6 kV Iernut	E											

3	Înlocuire AT3-ATUS-FS 400/400/160 MVA 400/231/22 kV din staţia 400/220 kV Porţile de Fier	E											
4	Creşterea siguranţei în funcţionare a zonei de reţea Argeş-Vâlcea, realizarea statiei 400 kV Arefu si montarea unui AT 400 MVA, 400/220 kV.	E											
5	Creşterea gradului de siguranţa în alimentarea consumatorilor din zona de nord-est a Municipiului Bucureşti racordaţi în staţia 220/110/10 kV Fundeni	E											
6	Realizare statie noua 400/110kV Grozavesti si două bobine de compensare 100MVAr +LEC 400 kV s.c. Domnesti - Grozavesti +LEC 400 kV s.c. Bucuresti Sud-Grozavesti	E											
7	Realizare statie noua 400/220kV Fundeni si o bobina de compensare 100MVAr +LEA 400kV Fundeni-Brazi Vest +racordare LEA 400kV Bucuresti Sud-Gura Ialomitei intrare-iesire in statia 400kV Fundeni	E											finalizare dupa 2032
8	Cresterea gradului de siguranta in alimentarea consumatorilor din zona de sud a Municipiului Bucuresti racordati in statia 400/220/110/10 kV Bucuresti Sud	E											
D	INTEGRAREA PRODUCTIEI DIN SRE SI CENTRALE NOI - DOBROGEA SI MOLDOVA												
1.1	Racordarea LEA 400 kV Stupina - Varna si LEA 400 kV Rahman - Dobrudja în staţia 400 kV Medgidia Sud. Etapa I - Extinderea staţiei 400 kV Medgidia Sud	E											
1.2	Racordarea LEA 400 kV Stupina-Varna si LEA 400 kV Rahman - Dobrudja în staţia 400 kV Medgidia Sud. Etapa II - LEA 400 kV d.c. Racorduri la staţia Medgidia Sud	E											
2	Trecere la 400 kV LEA Brazi Vest - Teleajen - Stalpu, inclusiv: Achiziţie AT 400 MVA, 400/220/20 kV şi lucrări de extindere staţiile 400 kV şi 220 kV aferente, în staţia 400/220/110 kV Brazi Vest	E											
2,1	LEA 400 kV Brazi Vest - Teleajen - Stalpu	E											
2,2	Extinderea statiei Brazi Vest (inclusiv AT4)	E											
2,3	Statia 400 kV Teleajen si retehnologizare statia 110 kV	E											
3	LEA 400 kV d.c. (1c.e) Constanta Nord - Medgidia Sud	E											
4	Trecerea LEA 400 kV Isaccea - Tulcea Vest de la simplu circuit la dublu circuit	E											

5	Marirea capacitatii de transport LEA 220 kV Stejaru - Gheorgheni - Fantanele	N											
6	LEA 400 kV Stalpu - Brasov, inclusiv interconectarea la SEN (linie nouă)	N											
7	Marirea capacitatii de transport tronson LEA 400 kV Bucuresti Sud - Pelicanu (8 km)	N											
8	Marirea capacitatii de transport LEA 400 kV Cernavoda - Pelicanu (53 km)	N											
E	INTEGRAREA PRODUCTIEI DIN CENTRALE - ALTE ZONE												
1	Staţia Ostrovu Mare 220 kV (staţie nouă)	N											
2	LEA 220 kV Ostrovu Mare - RET (linie nouă)	N											
F	CREŞTEREA CAPACITĂŢII DE INTERCONEXIUNE												
1	Trecerea la tensiunea de 400 kV a axului Portile de Fier - Resita - Timisoara - Sacalaz - Arad. *Etapa I:* Extindere statie 400 kV Portile de Fier; LEA 400 kV Portile de Fier - Resita; statia 400 kV Resita	E											
1,1	LEA 400 kV Portile de Fier - Resita	E											
1,2	Statia 400 kV Resita	E											
2	Trecerea la tensiunea de 400 kV a axului Portile de Fier - Resita - Timisoara - Sacalaz - Arad. Etapa II : LEA 400 kV d.c. Resita - Timisoara - Sacalaz + statia 400 kV Timisoara + statia 110 kV Timisoara	E											
2,1	Retehnologizare staţia 110 kV Timişoara şi Trecerea la tensiunea de 400 kV a axului Porţile de Fier - Anina - Reşiţa - Timişoara - Săcălaz - Arad, etapa II: Staţia 400 kV Timişoara	E											
2,2	LEA 400 kV d.c. Resita - Timisoara - Sacalaz	E											
3	Trecerea la tensiunea de 400 kV a axului Portile de Fier - Resita - Timisoara - Sacalaz - Arad. Etapa III: LEA 400 kV d.c. Timisoara - Sacalaz - Arad + statia 400/110 kV Sacalaz + extindere statia 400 Arad	E											
3,1	LEA 400 kV d.c. Timisoara - Arad	E											
3,2	Statia 400 kV Sacalaz si retehnologizare statia 110 kV Sacalaz	E											
3,3	Extindere statie 400 kV Arad si retehnologizare statia de 110 kV Arad	E											
4	LEA 400 kV d.c. (1c.e) Gutinas - Smardan	E											
5	Extinderea staţiei 400 kV Cernavodă, et. II: racordare linii noi	E											
6	LEA 400 kV d.c. Cernavoda - Stalpu si racord in statia Gura Ialomitei (linie nouă)	E											

7	Extinderea staţiei 400 kV Gura Ialomiţei cu două celule: LEA 400 kV Cernavodă 3 şi LEA 400 kV Stâlpu	E											
8	Statia 400 kV Stalpu (staţie nouă)+ Modernizare celule 110 kV si medie tensiune	E											
9	LEA 400 kV s.c. Gădălin - Suceava (LEA nouă)	E											
10	LEA 400 kV s.c. Suceava - Balti (LEA nouă - pentru portiunea de pe teritoriul Romaniei)*)	E											
11	LEA 400 kV s.c. Oradea Sud - Nadab - Bekescsaba, etapa finală: tronsonul dintre stâlpii 1-42 (48) ai LEA 400 kV Oradea Sud - Nădab	E											
12	LEA 400kV Portile de Fier - Djerdap circuitul 2	E											
13	Realizare LEA 400kV Nadab-Bekescsaba circ.2 şi lucrări conexe in staţia 400kV Nadab	E											
14	interconexiune RO-HU (LEA 400kV Oradea-Jozsa, AT nou Rosiori, AT nou Resita, reconductorarea axului 220 kV Urechesti-Tg. Jiu Nord-Paroseni- Baru Mare-Hasdat)	E											finalizare dupa 2030
14.1	LEA 400kV Oradea-Jozsa	E											finalizare dupa 2030
14.2	Montare AT nou 400/220 kV in statia Rosiori	E											finalizare 2030
14.3	Reconductorarea axului 220 kV Urechesti-Tg. Jiu Nord-Paroseni- Baru Mare-Hasdat	E											finalizare dupa 2030
G	Inlocuire componente sistem EMS SCADA AREVA Înlocuirea componentelor hardware, actualizarea si dezvoltarea aplicatiilor specifice ale Platformei Pieţei de Echilibrare - II DAMAS	N											
G.1	Inlocuire componente sistem EMS SCADA AREVA												
G.2	Înlocuirea componentelor hardware, actualizarea si dezvoltarea aplicatiilor specifice ale Platformei Pieţei de Echilibrare - II DAMAS												
H	Sistem de contorizare şi de management al datelor de măsurare a energiei electrice pe piaţa angro	N											
J	MANAGEMENT SISTEME INFORMATICE ŞI TELECOMUNICAŢII	N											
K	INFRASTRUCTURA CRITICA	N											
L	ALTE CHELTUIELI DE INVESTITII												