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DRAFT REPORT

on electricity grids: the backbone of the EU energy system
(2025/2006(INI))

Committee on Industry, Research and Energy

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MOTION FOR A EUROPEAN PARLIAMENT RESOLUTION

on Electricity grids: the backbone of the EU energy system (2025/2006(INI))

The European Parliament,

- having regard to the Treaty on the Functioning of the European Union, and in particular Article 194 thereof,
- having regard to the Commission communication of 28 November 2023 entitled ‘Grids, the missing link - An EU Action Plan for Grids’ (COM(2023)0757),
- having regard to Regulation (EU) 2021/1153 of the European Parliament and of the Council of 7 July 2021 establishing the Connecting Europe Facility and repealing Regulations (EU) No 1316/2013 and (EU) No 283/2014¹ (the CEF Regulation),
- having regard to Regulation (EU) 2022/869 of the European Parliament and of the Council of 30 May 2022 on guidelines for trans-European energy infrastructure, amending Regulations (EC) No 715/2009, (EU) 2019/942 and (EU) 2019/943 and Directives 2009/73/EC and (EU) 2019/944, and repealing Regulation (EU) No 347/2013² (the TEN-E Regulation),
- having regard to Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU³,
- having regard to Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity⁴,
- having regard to Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652⁵ (the Renewable Energy Directive),
- having regard to Directive (EU) 2024/1711 of the European Parliament and of the Council of 13 June 2024 amending Directives (EU) 2018/2001 and (EU) 2019/944 as regards improving the Union’s electricity market design⁶,
- having regard to Regulation (EU) 2024/1747 of the European Parliament and of the Council of 13 June 2024 amending Regulations (EU) 2019/942 and (EU) 2019/943 as

¹ OJ L 249, 14.7.2021, ELI: <http://data.europa.eu/eli/reg/2021/1153/oj>.

² OJ L 152, 3.6.2022, p. 45, ELI: <http://data.europa.eu/eli/reg/2022/869/oj>.

³ OJ L 158, 14.6.2019, p. 125, ELI: <http://data.europa.eu/eli/dir/2019/944/oj>.

⁴ OJ L 158, 14.6.2019, p. 54, ELI: <http://data.europa.eu/eli/reg/2019/943/oj>.

⁵ OJ L, 2023/2413, 31.10.2023, ELI: <http://data.europa.eu/eli/dir/2023/2413/oj>.

⁶ OJ L, 2024/1711, 26.6.2024, ELI: <http://data.europa.eu/eli/dir/2024/1711/oj>.

regards improving the Union's electricity market design⁷ (Electricity Market Design (EMD) Regulation),

- having regard to the Council conclusions on ‘Advancing Sustainable Electricity Grid Infrastructure’, as approved by the Transport, Telecommunications and Energy Council at its meeting on 30 May 2024,
 - having regard to Rule 55 of its Rules of Procedure,
 - having regard to the report of the Committee on Industry, Research and Energy (A10-0000/2025),
- A. whereas electricity grids are essential for the Union to achieve its clean energy transition and to deliver renewable energy while supporting economic growth;
- B. whereas in light of the growing demand for electricity, significant investments and upgrades are required to increase cross-border transmission capacity and modernise infrastructure, ensuring a flexible, decentralised and digitalised electricity system;
1. Calls on the Member States to fully explore and expand their electricity grid capacity, including transmission and distribution;
 2. Calls on the Commission, the Member States, DSO Entity⁸ and ENTSO-E⁹ to implement the actions of the EU grid action plan without delay;

Relevance of electricity grids for the European energy transition

3. Welcomes the Commission's communication on grids¹⁰; underlines the expected increase in electricity consumption of 60 % by 2030, the rising need to integrate a large share of variable renewable power into the grid, and the need for grids to adapt to a more decentralised, digitalised and flexible electricity system, resulting in an additional 23 GW of cross-border capacity by 2025 and a further 64 GW of capacity by 2030; notes that over 40 % of the Union's distribution grids are over 40 years old and need to be updated¹¹;
4. Reiterates that, by 2030, the Union needs to invest around EUR 375 to 425 billion in distribution grids and EUR 584 billion in electricity grids, including the adaptation of distribution grids to the energy transition;
5. Notes with concern that in 2023 the costs of managing electricity grid congestion in the EU were EUR 4.2 billion¹² and continue to rise, and that curtailment is an obstacle to increasing the share of renewable energy sources;

⁷ (OJ L, 2024/1747, 26.6.2024, ELI: <http://data.europa.eu/eli/reg/2024/1747/oj>).

⁸ DSO Entity is the Association of distribution system operators (DSOs) in Europe.

⁹ The European Network of Transmission System Operators for Electricity (ENTSO-E) is the association for the cooperation of European transmission system operators (TSOs).

¹⁰ Commission communication of 28 November 2023 entitled ‘Grids, the missing link - An EU Action Plan for Grids’ (COM(2023)0757).

¹¹ *ibid.*

¹² [ACER 2024 Market Monitoring Report, ‘Transmission capacities for cross-zonal trade of electricity and congestion management in the EU’, 3 July 2024.](#)

6. Regrets that delays in responding to requests for connection to distribution grids result in a slower pace of electrification, even in Member States where generation from renewables is rapidly increasing;

Regulatory situation and challenges

7. Underlines that the TEN-E Regulation and the Projects of Common Interest (PCI) are powerful tools in the development of the Union's cross-border energy infrastructure; regrets the shortcomings in the current 10-year network development plan (TYNDP) for European electricity infrastructure, which results in investment interests falling short of cross-border needs¹³, and that grid planning does not fully leverage cross-border and cross-sectoral savings¹⁴; urges the Commission to introduce more coordinated, cross-sectoral planning; notes that, although the TEN-E Regulation enables smart electricity grid projects to obtain PCI status, even if such projects do not cross a physical border, the PCI list in 2023 included only five such projects; strongly believes, therefore, that the PCI process needs to be strengthened; calls on the Commission to urgently propose a targeted revision of the TEN-E Regulation in order to (1) introduce a robust planning process with a strengthened role for European Union Agency for the Cooperation of Energy Regulators (ACER) in this process, (2) ensure scenarios are drawn up in line with the decarbonisation agenda and enable easier access for smart electricity grid projects, and (3) introduce a simplified application process for small and medium-sized distribution system operators;
8. Strongly emphasises that the Connecting Europe Facility for Energy (CEF-E) has proven to be the crucial instrument for co-financing cross-border energy infrastructure and insists on its continuation; calls on the Commission to propose a targeted amendment to the CEF Regulation to revise the eligibility criteria to better reflect distribution-level projects relevant for the achievement of EU energy and climate targets;
9. Considers the lack of detailed, reliable and comparable data on national and EU grid planning an obstacle to more efficient grids; welcomes, therefore, DSO Entity's report on good practices on Distribution Network Development Plans¹⁵; urges the Commission to develop guidelines based on this report in cooperation with DSO Entity to harmonise national development planning and require all transmission and distribution operators to provide energy regulators with data about their current grid hosting capacity and grid planning to enable energy regulators to properly scrutinise grid planning, and to enable stakeholders to better take grid capacities into account when planning their investments;
10. Notes the work done by ENTSO-E and DSO Entity on harmonised definitions of available grid hosting capacity for system operators and to establish a Union-wide overview thereof; calls on the national regulatory authorities (NRAs) to provide a clear framework to allow the 'first-come first-serve' approach to be abandoned by disincentivising applications for connection where these are not substantiated by a solid

¹³ [ACER 2024 Monitoring Report, 'Electricity Infrastructure development to support a competitive and sustainable energy system', December 2024, 16 December 2024, p. 17.](#)

¹⁴ *ibid.*

¹⁵ [DSO Entity, 'DSO Entity's identified good practices on Distribution Network Development Plans', 1 July 2024.](#)

project or where the developer cannot show sufficient commitment to the realisation of a project;

11. Regrets that some Member States did not achieve the 10 % interconnection target by 2020 and urges them to strive to achieve the current 15 % interconnection target;
12. Welcomes the provisions adopted in the latest revision of the Renewable Energy Directive to accelerate, streamline and simplify permit-granting procedures for grid and renewable energy projects;

Financing

13. Observes with concern that the budget allocated under CEF-Energy has been insufficient to expedite all PCI project categories; calls on the Commission and the Member States to significantly increase such funding when proposing the next multiannual financial framework (MFF);
14. Deeply regrets that, whereas regional funds such as the Cohesion Fund or the European Regional Development Fund provide for grid investments, in principle, they are in practice underutilised for grid projects; calls on the Commission and Member States to ensure that a proportionate amount of such funds is also spent on grid investments;
15. Calls on the Commission to propose a funding instrument, such as one based on revenues from the market-based emission reduction scheme, to support decentralised grid projects;
16. Is convinced that anticipatory investments will help to address grid bottlenecks and prevent curtailment; points out that the EMD Regulation sets out regulatory elements for anticipatory investments but lacks a harmonised definition and implementation across the Union; calls on the Member States to swiftly implement its provisions and remove national legal barriers, and on the Commission to urgently provide guidance regarding the approval of anticipatory investments, as announced¹⁶; emphasises that Member States should encourage private investments by providing risk mitigation tools or Member State guarantees;
17. Underlines that investments should not only be focused on capital expenditure, as investments increasing the existing infrastructure should equally be considered; therefore welcomes Article 18 of the EMD Regulation, which calls for tariff methodologies to give equal consideration to capital and operational expenditure; calls on the Commission and the Member States to thoroughly implement its provisions;
18. Is concerned that experts forecast network tariff increases of around 50 % to 100 % by 2050¹⁷; stresses, therefore, the need for instruments that support grid operators in efficiently managing available grid capacity, with a view to reducing imminent grid investment needs; highlights that flexible connection agreements and flexible network tariffs contribute to grid efficiency; invites NRAs to promote these flexible tariffs;

¹⁶ COM(2023)0757.

¹⁷ ACER 2024 Monitoring Report, 'Electricity Infrastructure development to support a competitive and sustainable energy system', op. cit.

19. Points out that transmission infrastructure and availability of cross-zonal capacities are vital for an integrated market; notes that the EMD Regulation sets a 70 % target of capacities available for cross-zonal trade; regrets that achieving this target has often resulted in costs for redispatch; notes that existing cost sharing mechanisms, such as cross-border cost allocation (CBCA), inter-transmission system operator (TSO) compensation and re-dispatching cost sharing, are limited and difficult to implement, which does not encourage cross-border investments; calls on the Commission to improve such mechanisms;

Grid enhancing technologies

20. Underlines that grid-enhancing technologies can significantly increase the efficiency of existing grid capacities without an immediate need for new lines; urges NRAs to incentivise TSOs and DSOs to rely more on such technologies, through remuneration schemes based on benefits rather than costs, and to benchmark them on their uptake of such technologies;
21. Welcomes the work accomplished by ENTSO-E and DSO Entity in developing the TSO/DSO Technopedia¹⁸;
22. Recalls the importance of the rapid implementation of the cybersecurity network code and the related legislation; considers that NRAs should acknowledge the costs incurred by operators in adopting cybersecurity measures;
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23. Instructs its President to forward this resolution to the Council and the Commission.

¹⁸ [DSO Entity, 'Implementation of Action 7 in the EU Action Plan for Grids: DSO/TSO Technopedia, ENTSO-E & DSO Entity', 18 December 2024.](#)

EXPLANATORY STATEMENT

The update, modernisation and digitalisation of electricity grids in the Union will be crucial to achieve the EU's climate and energy goals and increase our competitiveness. According to the Commission, there will be an expected increase of electricity consumption of 60% until 2030, as well as an increased need to integrate a large share of renewable electricity.

A completion of the Union's energy market integration will save up to EUR 40 billion per year, and increasing the cross-border electricity trade by 50% could raise the GDP by 0.1 % annually.¹

Over 40% of the Union's distribution grids are over 40 years old. They will face enormous challenges by the objectives we set: 130 million electric vehicles by 2035 – 85% of charging will be done residential, 10 million heat pumps by 2027.² By 2030, EUR 584 billion need to be invested in electricity grids, including EUR 375-425 billion in distribution grids.

If the Union does not face up to these changed realities, its economy will face increasing costs. In 2023 alone the costs stemming from managing electricity grids congestion in the EU summed up to EUR 4.2 billion³ and such costs will continue to rise. In addition, we suffer from massive costs due to curtailment. Nearly 30 TWh of generation were lost to grid curtailment in 2023 across six countries in Europe, costing close to EUR 9 billion⁴.

It is therefore essential to technically update the grid, expand it and increase its capacity, keeping the costs in check at the same time, as both grid condition and cost have a significant impact on the Union's competitiveness.

Regulatory Situation

While the Union's energy system has changed, the rules and frameworks governing grids have not yet been sufficiently adapted. EU legislation must now put grids in the spotlight, which firstly requires a fast implementation of recently adopted Union law revisions, e.g. EMD⁵ and the RED III⁶. Also the main framework governing grid development - the Trans-European Network for Energy regulation (TEN-E) - needs to undergo scrutiny. In its Communication on grids⁷, the Commission proposes 14 non-legislative action points to address challenges arising. The Rapporteur believes that these are valuable proposals, as they

¹ IMF Background Note on EU Energy Market Integration. 6 January 2025 (p. 4)

² EU DSO Entity funding presentation 25 Sept 24

³ ACER, Transmission capacities to support cross-zonal trade and congestion management, 2024 Market Monitoring Report, 3 July 2024:

https://www.acer.europa.eu/sites/default/files/documents/Publications/ACER_2024_MMR_Crosszonal_electricity_trade_capacities.pdf

⁴ Aurora Energy Research, Evolution of Grid Curtailment in Spain

⁵ Directive (EU) 2024/1711 of the European Parliament and of the Council of 13 June 2024 amending Directives (EU) 2018/2001 and (EU) 2019/944 as regards improving the Union's electricity market design. Regulation (EU) 2024/1747 of the European Parliament and of the Council of 13 June 2024 amending Regulations (EU) 2019/942 and (EU) 2019/943 as regards improving the Union's electricity market design.

⁶ Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652.

⁷ Commission communication of 28 November 2023 entitled 'Grids, the missing link - An EU Action Plan for Grids' (COM(2023)757)

tie to many adopted legislative frameworks and propose non-legislative action. However further actions will be needed.

The TEN-E regulation as main instrument for connecting EU countries' energy networks lays down the procedures for projects to achieve the 'PCI Status' (Projects of Common interest), which allows access to CEF funding (Connecting Europe Facility). The current ten-year network development plan (TYNDP) for electricity infrastructure shows shortcomings with regards to investments that are not matched with cross-border needs, resulting in investments in national grid infrastructure rather than increasing cross border capacity. Currently the TYNDP is mainly driven by inputs of transmission system operators (TSO), which makes it difficult to do proper checks or to provide for improvements. TEN-E also provides for smart electricity projects on distribution level to achieve PCI status, without TSO involvement and without crossing a physical border. However, the current PCI list only includes five projects of this nature. The Rapporteur therefore suggests a targeted revision of the TEN-E regulation. Giving ACER a stronger role in the TYNDP process, for instance at the stage of the drafting of the scenarios and also throughout the process, will give the planning the cross-border focus needed. To better reflect the role of distribution grids, the Rapporteur proposes to simplify the application procedure for small and medium sized DSOs. An amendment to the CEF regulation reflecting the role of distribution grids will also become necessary.

Developing the European grid into a modern, sustainable electricity grid will also require oversight as to which grid investments have been undertaken, are ongoing and which are planned. While there is more information and structured data available at cross border level, data for national grid planning is currently not easily available and difficult to compare. ACER's electricity grid monitoring covers 10-15% of all EU's power grid investments⁸. For a more strategic EU grid planning, it is critical that these data become available. It will ensure on the one hand that the grid planning keeps pace with the decarbonisation agenda, and on the other to enable stakeholders to take grid planning into account when making investment decisions.

Grid connection queues are currently handled differently in each Member State. To avoid uncertainty and market fragmentation, clearer guidance is necessary to discontinue the 'first come first serve principle'. Instead, there should be clear priority criteria in place as to which projects can be connected. These criteria should include the quality and maturity of the project, the project promoter's commitment, the public interest, its strategic value and its contribution to the decarbonisation agenda. To achieve the most harmonised result possible, the rapporteur proposes for the Commission to amend the EMD Regulation accordingly.

Whereas swift permitting procedures are crucial for the grid build-out, projects still face many years of permitting procedures. The RED provides for accelerated permitting for grid infrastructure, which is welcomed. The provisions should now urgently be implemented by Member States.

Financing

While global investments in power capacity have increased by 40 %⁹, the grid investments have remained relatively stable. Estimations suggest necessary investments between EUR 1950 billion and EUR 2600 billion between 2025 and 2050.

⁸ ACER Monitoring Electricity Report

⁹ between 2011-2022, IEA World Energy Investment 2023

The Connecting Europe Facility for Electricity (CEF-E) is the central tool to help finance cross border infrastructure. It is of utmost importance that, given the increasing need for further investments, the next Multiannual Financial Framework will reflect these investment needs in the CEF budget. CEF-E must be significantly increased to further connect electricity grids across borders. In addition, between 2014 and 2020, CEF-E funded around EUR 5.3 bn worth projects, of which around EUR 1.7 billion in transmission and EUR 237 million in smart distribution grids. Given the important relevance of investments on distribution level, the share of funding for these projects must be increased.

For other distribution projects, EU funds managed by the Member States, such as, the Cohesion Fund, the Regional Development Fund or others, exist. However, only very limited amounts have been allocated to grid projects, although these funds clearly provide for grid infrastructure outside TEN-E. In the field of energy, the available funds were used mostly for generation projects. The Rapporteur therefore suggests that the spending for grids should be increased, by ensuring that when money is spent in electricity generation, a proportionate amount of these funds should also be spent on grids. To ensure efficient use of these funds, streamlining is necessary.

In addition, the Rapporteur proposes the creation of a complementary funding instrument outside the MFF, based on ETS revenues.

Grid operators need to make forward-looking investments. The EMD already provides for anticipatory investments in grids and yet there are still national barriers hindering these investments. In addition, there is no common definition and understanding of how forward looking their horizon should be. Member States must remove barriers, and the Commission shall develop guidelines as to which investments are eligible as anticipatory investments. Member States shall also encourage further investments, such as private funds, EIB support or national banks. Risk mitigation tools and state guarantees may compliment those financing tool at national level.

An equal recognition of capital and operational expenditure, as foreseen in EMD, which needs to be implemented.

Cross-border capacities are vital for an integrated market. This requires well-planned, efficiently used transmission networks. 70% of capacities must be made available for cross-zonal trade and progress towards this goal is visible but limited. In many cases this objective implies re-dispatching costs. Parties benefiting from infrastructure and paying for the investments and operation are not the same. Existing mechanisms (Inter-TSO compensation (ITC), Cross-Border Cost Allocation or re-dispatching cost sharing) are either difficult to implement or financially not sufficiently equipped. The infrastructure element of the ITC fund is limited to EUR 100 Million annually. This sets wrong incentives. The Commission should therefore review the methodologies of these cost sharing schemes.

To keep grid fees bearable for customers, new grid fee models must be considered. Some Member States already introduced flexible grid fees, such as discounts, which can incentivise to shift the grid usage to outside peak hours. Flexible connection agreements for suppliers can help to shift the electricity supply to outside peak hours.

In addition to network tariffs and EU funds it is necessary also to explore further financing tools on

Grid enhancing technologies

Innovative digital and grid enhancing technologies will contribute to grid efficiency. Although these technologies will not substitute grid expansion, they can be implemented faster where no permitting is needed and can postpone or reduce the need for infrastructure investment. Grid capacities could be increased by 20-40% by 2040 and cost could be reduced by 35% compared to conventional grid buildout.¹⁰ This is why they should be considered, where possible, by introducing them in the project identification process and in the NDPs and TYNDP. The Rapporteur therefore believes that NRAs should incentivise operators to promote these, for instance by introducing remuneration schemes which are benefit-based rather than cost-based. Digitalisation for network operation should be accelerated and the digital information exchange between TSOs and DSOs for the utilisation of networks should be enhanced.

¹⁰ Compass Lexecon, *Prospects for innovative power grid technologies*, June 2024, <https://www.currenteurope.eu/wp-content/uploads/2024/06/CL-CurrENT-BE-Prospects-for-Innovative-Grid-Technologies-final-report-20240617-2.pdf>.

ANNEX: ENTITIES OR PERSONS FROM WHOM THE RAPPORTEUR HAS RECEIVED INPUT

Pursuant to Article 8 of Annex I to the Rules of Procedure, the rapporteur declares that she received input from the following entities or persons in the preparation of the draft report:

Entity and/or person
ACER
Agora
Bruegel
CAN Europe
DSO Entity
E-Control
e.DSO
European Commission DG ENER
Enel
ENTSO-E
Eurelectric
National Grid
Schneider Electric
Siemens
Synergi
Wiener Stadtwerke
WindEurope

The list above is drawn up under the exclusive responsibility of the rapporteur.

Where natural persons are identified in the list by their name, by their function or by both, the rapporteur declares that she has submitted to the natural persons concerned the European Parliament's Data Protection Notice No 484 (<https://www.europarl.europa.eu/data-protect/index.do>), which sets out the conditions applicable to the processing of their personal data and the rights linked to that processing.