ENTSO-E
Annual Work Programme

2027 Edition – ENTSO-E's Work on Legal Mandates

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Mission Statement

ENTSO-E – the European Network of Transmission System Operators for Electricity – brings together 40 electricity transmission system operators (TSOs) from 36 countries. ENTSO-E members are responsible for the secure and coordinated operation of Europe's electricity system. Together, they operate a system of around 500,000 km of power lines **– the largest interconnected electrical grid in the world –** and serve about 520 million citizens.

Electricity is not merely a market commodity; it is an essential service, and TSOs are fully regulated public service entities whose work is essential to powering Europe. The grid is the backbone of the electricity system and extends across the continent, beyond the borders of the EU. By working together, TSOs guarantee a functioning infrastructure that makes electricity trading possible, contributes to decarbonisation goals and ensures a reliable and efficient power supply for all members of society.

These shared public service responsibilities need close cooperation beyond national borders, which led to the creation of ENTSO-E. Today, the association serves two main complementary purposes:

1. Cooperation of European TSOs

The foundations of this cooperation date back to the 1950s, with the creation of electrical -synchronous areas and interconnections that laid the groundwork for today's interconnected European power system. TSOs established associations to work together on their own mandates and missions; these associations came together to form what is now ENTSO-E. The European electricity system is one of the most stable and reliable grids in the world, supported by cooperation and coordination among TSOs within the European Union and in closely interconnected European countries. ENTSO-E strives to build consensus for decision-making amongst its member TSOs, as this forms the strongest foundation for cooperation.

2. Fulfilling EU legal mandates

With the adoption of the Third Energy Package in 2009, ENTSO-E's role was formally recognised by European institutions. ENTSO-E was granted legally mandated tasks to further develop the European interconnected grid and to facilitate the integration of European electricity markets. These mandates cover a large spectrum of tasks, including system operation, system development, market integration, information technologies, R&D and innovation.

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Foreword

The transformation of Europe's energy system has entered a decisive phase. Energy has become a strategic priority for Europe's security, competitiveness and resilience. Electrification remains the foundation of a competitive and decarbonised European economy, placing new demands on the power system. At the heart of this transformation, the electricity grid is a key enabler of Europe's energy transition. A future-ready transmission system is essential to deliver on climate objectives, strengthen energy security, support industrial competitiveness, and reinforce Europe's technological leadership.

In response, the European Union has launched new policy initiatives to accelerate grid development and strengthen the energy system. Recent initiatives, including the Affordable Energy and Electrification Action Plans, the European Grids Package and broader energy-related measures to strengthen Europe's industrial competitiveness and security, place electricity infrastructure at the centre of the transition. At the same time, growing geopolitical uncertainty, evolving cybersecurity risks and the accelerating digital transformation of the energy sector underscore the need for coordinated action across infrastructure, markets, industry and innovation. Together, these developments highlight that delivering the energy transition requires an integrated policy framework and effective implementation across Europe. ENTSO-E and its members, Europe's electricity transmission system operators (TSOs), are central to enabling the energy transition.

Our role is to ensure that the grid evolves in line with policy objectives, market developments and societal needs, while maintaining the reliability, security and affordability that European citizens and businesses depend on. As digitalisation accelerates and new security challenges emerge, TSOs also play a growing role in strengthening the resilience of Europe's critical energy infrastructure. The ENTSO-E Annual Work Programme (AWP) 2027 responds to this evolving policy landscape. Building on the Association's Strategic Roadmap, it translates European priorities and legal mandates into concrete deliverables and coordinated actions across the TSO community. It outlines ENTSO-E's strategic activities for the coming year and turns policy objectives into practical implementation, supporting the development of a secure, competitive, affordable and future-ready European electricity system.

Enable Grid Infrastructure Development and Grid Connections

The ENTSO-E AWP 2027 reinforces ENTSO-E's core mission of enabling a robust, interconnected and future-ready grid. A central milestone will be the advancement of the **TYNDP 2028 cycle**, including joint scenario development, system needs assessments and preparations for project cost-benefit assessment under the evolving **TEN-E framework**. As electrification accelerates, renewable integration increases and industrial demand grows, grid development must remain anticipatory to ensure timely infrastructure deployment across borders and sea basins. The ENTSO-E AWP 2027 also supports the implementation of key elements of the **European Grids Package**, including cross-border planning, permitting acceleration, cost-sharing mechanisms and grid financing. Particular attention will be given to infrastructure financeability, anticipatory investments and regulatory frameworks that enable timely grid expansion. To address industrial challenges, ENTSO-E will continue its collaboration with other stakeholders to strengthen European supply chains, support procurement coordination, address workforce shortages and improve visibility of future infrastructure needs. Together, these actions help ensure that infrastructure delivery keeps pace with Europe's energy transition while maintaining efficiency and affordability.

Strengthen Flexibility and Adequacy

Flexibility remains essential to an energy system increasingly powered by variable renewable generation. As supply and demand patterns continue to evolve, flexibility supports both resource adequacy and operational stability. In 2027, ENTSO-E will continue supporting TSO activities related to implementation of flexibility needs assessments, the European Resource Adequacy Assessment (ERAA 2027), the Seasonal Outlooks, and the Network Code on Demand Response. These tools remain critical for anticipating adequacy risks and maintaining security of supply across Europe.

Enhance Security and Accelerate Digitalisation

Energy security has become a defining pillar of Europe's strategic agenda, encompassing security of supply, operational security, physical infrastructure protection and cybersecurity. Recent geopolitical developments have demonstrated the importance of preparedness, coordination and resilience. ENTSO-E will continue working with its members, regulators and regional partners to enhance operational coordination, strengthen risk preparedness and improve resilience against evolving threats. Cybersecurity remains a particular priority. The ENTSO-E AWP 2027 advances implementation of the Network Code on Cybersecurity (NCCS), including work related to risk assessments, information sharing, cybersecurity exercises and the development of the Common Electricity Cybersecurity Framework.

Operations of the future power system and market integration and transparency

The ENTSO-E AWP 2027 advances work on operations and market design. This includes supporting market design reform for both onshore and offshore systems, continuing the evolution of network codes and guidelines (NCs and GLs), and deepening regional integration in South-Eastern and Eastern Europe, and strengthening technical relations with UK TSOs. The ENTSO-E AWP 2027 also supports work on market frameworks that incentivise flexibility and facilitate efficient price signals. At the same time, ENTSO-E will continue strengthening operational resilience through initiatives such as the Common Grid Model, the next-generation European Awareness System (EAS) and the implementation of recommendations arising from system incidents.

Also in Focus: Innovation

The ENTSO-E AWP 2027 also strengthens operational readiness through improved coordination, modelling and forecasting; promotes joint energy system planning across transmission and distribution as well as electricity, gas and hydrogen systems; and advances data transparency and digitalisation through initiatives such as Technopedia, Capacitypedia, data interoperability activities and digitalisation projects. Innovation remains a cross-cutting priority, with continued implementation of the RDI Roadmap, support for emerging technologies, the use of artificial intelligence and digital tools where appropriate, and efforts to embed innovation into system planning, operations and advocacy.

Introduction

Electricity is an essential service for our society. From households to industries, from hospitals to digital services, European citizens and businesses rely on the continuous and reliable flow of electricity to function. The power grid is more than just infrastructure – it is the backbone of our energy system and a pillar of European citizens' well-being and competitiveness, ensuring energy security and resilience in an increasingly complex world.

Recent geopolitical developments have underscored the critical role of ENTSO-E and the importance of transmission network and system operations that are secure, resilient, and deeply interconnected. ENTSO-E and Europe's TSOs successfully synchronised Ukraine, Moldova, and the Baltic countries with the continental grids, demonstrating ENTSO-E's operational excellence. However, geopolitical developments and their impact on regional energy systems and global energy security highlight a new reality. Europe's electricity infrastructure must be better protected and reinforced against an evolving range of physical, cyber, and geopolitical threats.

At the same time, the energy price crisis has highlighted the importance of strong interconnections to guarantee affordable and reliable electricity. Safeguarding Europe's competitiveness requires efficient electricity markets, secure system operation, and stable investment conditions. These elements are essential to supporting Europe's industrial base and enabling a sustainable, clean, and affordable energy transition.

Looking ahead, the Clean Industrial Deal's objective of achieving climate neutrality by 2050 by transforming industrial decarbonisation into a driver of growth remains ambitious but essential. Delivering this goal depends on a robust cross-border backbone and a flexible power grid capable of integrating large-scale renewable energy sources while responding to growing system flexibility needs. This requires a modern, digitalised, and well-coordinated transmission system, supported by timely infrastructure investment, efficient market design, and a stable regulatory framework.

ENTSO-E is committed to fulfilling its twofold role: managing the present by ensuring a secure, competitive, and efficient power system, while also preparing for the future – delivering a grid ready to support Europe's carbon-neutrality ambitions. ENTSO-E stands ready to support policymakers in achieving these objectives for the benefit of all Europeans. This AWP outlines the key activities planned for 2027 to address these challenges and continue delivering a secure, resilient, and sustainable electricity system for Europe.

Policy Context

The ENTSO-E AWP 2027 is published at a decisive moment for the European power system. The European Commission has placed competitiveness and affordability at the centre of its agenda. Building on the Draghi and Letta reports, this framework identifies three transformational imperatives for Europe's economy and energy system, namely innovation, decarbonisation and security. Within this approach, secure energy systems and affordable energy prices play a central role in strengthening Europe's competitiveness while advancing the clean energy transition.

In late 2025 and throughout 2026, the Commission advanced several initiatives that will directly influence policy and regulatory developments in 2027, such as the European Grids Package, including the revision of the TEN-E Regulation, the review of the Energy Security Framework, the establishment of the renewable energy framework, a proposal for a Regulation on network charges, the Electrification Action Plan, the Public Procurement Act and the Industrial Accelerator Act. Other important legislative initiatives include the Cybersecurity Act Revision, the Digital Networks Act and the Data Centre Energy Efficiency Package, as well as the update on the governance of the Energy Union and on the Connecting Europe Facility – Energy (CEF-E). These proposals seek to reinforce preparedness and resilience as Europe continues to navigate heightened geopolitical risk.

In 2027, ENTSO-E will actively contribute to these policy discussions by fulfilling its legally mandated tasks, providing technical expertise for evidence-based decision-making and supporting TSO collaboration. ENTSO-E will continue to serve as the bridge between needs and solutions for power system operation and European policy goals. The evolving EU policy landscape underscores the importance of strengthened cooperation with TSOs to ensure the secure, efficient and sustainable evolution of the European power system.

1 Initiatives to Ensure System Security

This priority area arises directly from the ENTSO-E Strategic Roadmap and encompasses several projects that enhance the operational reliability and security of the pan-European grid, including direct application of the conclusions of the Security of Critical Infrastructures Task Force.

It includes, among other activities:

- initiatives aiming to support TSOs to ensure security of supply and to protect the power system against physical, cyber and hybrid threats.
- the development and implementation of EU cybersecurity frameworks, contributions to defence and restoration planning, and support for secure communication networks among TSOs.
- monitoring and supporting implementation of the recommendations from Expert Panel investigations of major power system incidents that occurred in 2025 or earlier.

Risk Preparedness

Under Regulation (EU) 2019/941 on risk preparedness in the electricity sector, ENTSO-E is mandated to support EU-wide risk preparedness by assessing risks to electricity security (Article 4), developing the common methodology for regional electricity crisis scenarios (Article 5), and identifying regional electricity crisis scenarios (Article 6). These regional scenarios were subsequently reassessed in 2024.

In 2027, final preparations will be made for the third set of regional electricity crisis scenarios, to be identified in 2028. Key focus areas include close engagement with stakeholders through workshops and sessions on the regional electricity crisis scenarios identified in the previous cycle, and applying lessons and improvements from previous iterations to strengthen the processes and increase European energy resilience.

ICT Security

ENTSO-E is focused on advancing several key cybersecurity initiatives:

Secure Software Development Life Cycle (SSDLC)

ENTSO-E will embed security throughout the software development life cycle by applying static code analysis, dynamic testing, penetration testing and threat modelling in cooperation with suppliers and IT teams. In 2027, ENTSO-E will expand role-based awareness and training for security enablers and evaluate new tools to improve the efficiency and coverage of the Cybersecurity Test Lab. These activities will strengthen internal capacity and support consistent security assurance for new and evolving ICT solutions.

Steering Group ICT Security Support

In 2027, the Steering Group ICT Security will deliver risk-assessment reports for Ukrenergo and Moldelectrica, rework the ENTSO-E Incident Sharing Process, and organise cyber-focused information-sharing sessions for members. It will also support implementation of the ICT Strategy and update ENTSO-E's Cybersecurity Strategy. Governance and oversight will be maintained through at least seven Steering Group ICT Security meetings during the year.

Communication Network (CN)

Physical Communication Network (PCN) and Underlying Services Operation

The Physical Communication Network (PCN) is the operational ICT infrastructure used by the Communication Network Core Team (CN CT) and participating TSOs acting as CN Service Providers to deliver services governed by the CN Multilateral Agreement. ENTSO-E's Communication Network domain provides central coordination between CN CT, the CN Service Providers, ENTSO-E groups and relevant external entities. In 2027, operational activities will cover upgrades and new lines for the PCN, onboarding of new services such as EAS NextGen, VP/S, MARI and PICASSO, and expansion to new participating entities. They will also include TSO router and topology changes, changes to the Network Management System and support for TSO upgrades, as well as operation of the central Demilitarised Zone, Central Security Information and Event Management service, and Secure File Transfer Protocol service.

ENTSO-E will additionally coordinate preventive actions, vulnerability management and mitigation, reporting, and meetings of the Communication Network Core Team.

PCN Out-of-Band (OOB) Management Project and Satellite Network Operation

The PCN Out-of-Band Management project will use satellite communications to provide a backup network for critical TSO services, including SCADA, EAS and control-room telephony, supporting business continuity and compliance with the Network Code on Emergency and Restoration. Following implementation of the central satellite hubs and completion of a pilot with two TSOs in 2026, the 2027 implementation phase will focus on connecting all TSOs participating in the PCN. The satellite network will provide the Emergency Data Service, Emergency Voice Service and an alternative management channel for PCN routers.

Emergency and Restoration

Commission Regulation (EU) 2017/2196, establishing a network code on electricity emergency and restoration (NC ER), sets out harmonised rules for safeguarding operational security, responding to emergency situations, and restoring the system as efficiently and quickly as possible. In 2027, ENTSO-E will work on preparing for a revision of NC ER. In addition, ENTSO-E will ensure consistency between the NC ER and other network codes and guidelines that have recently been amended. This will help ensure that the system remains viable when safeguarding measures are activated and that a normal system state can be restored rapidly and efficiently, while taking account of the additional challenges introduced by more decentralised generation.

Coordinating Operational Security Analysis (CSAM)

ENTSO-E will continue implementation work pursuant to Article 44 of the methodology for coordinating operational security analysis (CSAM), which requires the development of a probabilistic risk-assessment methodology.

ENTSO-E will continue collecting data on grid disturbances and will discuss the results of the proof-of-concept solution with regulators to advance towards probabilistic risk assessment.

Incident Classification Scale (ICS)

ENTSO-E will continue publishing annual reports on the operational security indicators and incident classification scale (ICS) and Load Frequency Control (LFC), as required under Article 15 and Article 16 of the SO GL.

ENTSO-E will work on the amendment of the ICS methodology to incorporate identified improvements. Furthermore, ENTSO-E will continue to monitor the increasing number of voltage violations in the TSOs' systems.

Implementation of Recommendations from Expert Panels Reports

ENTSO-E will monitor implementation of recommendations stemming from the final reports of Expert Panel investigations conducted after each ICS Scale 2 or Scale 3 incident since 2021.

Where relevant, ENTSO-E will develop concrete actions and guidelines to support TSOs in implementing the recommendations arising from the Expert Panel reports, with a specific focus on the high-priority recommendations identified in reports published in 2026.

Synchronous Areas and Regional Groups

ENTSO-E either supports each Regional Group corresponding to a synchronous area (SA) on an ad hoc basis or provides administrative and technical support to the specific region.

ENTSO-E will continue developing mutual coordination and support between SAs via HVDC links, with a particular focus on offshore, in accordance with the ENTSO-E Offshore Roadmap.

The work aims to coordinate short- and long-term measures to mitigate frequency deviations in the Continental Europe Synchronous Area (CE SA). The focus is on the deterministic frequency deviations related to the change of scheduling programmes in the early morning and late evening hours. ENTSO-E will also support implementation in CE of the probabilistic frequency containment reserve (FCR) dimensioning methodology, and the minimum activation time for FCR providers with limited energy reservoirs (LER).

Annual Load-Frequency Control Report

The Load-Frequency Control (LFC) annual report is a requirement of the System Operations Guidelines (SO GL). Article 16 of SO GL requires the TSOs of each EU Member State to provide ENTSO-E with the necessary data and information for the preparation and creation of the LFC annual report. The LFC report presents the results of frequency quality evaluation criteria for each SA and LFC block, along with the FCR obligations and initial FCR obligations of each TSO for every month of the preceding two years. It also includes implementation dates of any mitigation measures or ramping requirements to alleviate deterministic frequency deviations in which TSOs were involved during the preceding year. Each annual report is separately approved for publication by the ENTSO-E System Operations Committee.

Stability Management

ENTSO-E is committed to driving innovative solutions to maintain grid stability, frequency control, and resilience within the evolving European hybrid AC/DC power system. Several tasks will support this activity. Task "Stability Management Ten-Year Roadmap" aims to provide a roadmap with major milestones to map stability management initiatives over a ten-year period. Task "Enhanced Stability Monitoring in Future Control Rooms" aims to create a project concept aligned with a relevant EU Horizon Call.

The increasing deployment of HVDC systems requires a better understanding of system-stability challenges in mature HVDC grids and their interaction with the wider AC network. ENTSO-E will therefore work on the "HVDC Grid Stability" study, focusing in particular on identifying DC-side stability issues and the technical requirements of mature HVDC grids.

Cybersecurity Network Code

ENTSO-E is committed to maintaining and enhancing cybersecurity across the grid through implementation of Commission Delegated Regulation (EU) 2024/1366 establishing the Network Code on sector-specific rules for cybersecurity aspects of cross-border electricity flows (NCCS Regulation), which entered into force on 13 June 2024. The NCCS Regulation establishes mandatory, harmonised cybersecurity rules for cross-border electricity flows. It targets high- and critical-impact entities and requires them to conduct comprehensive risk assessments, apply minimum security controls, ensure supply-chain security, report incidents and manage the procurement of new or updated ICT products, processes and services.

In 2027, ENTSO-E will continue implementing the NCCS Regulation to boost energy grid resilience against cyber threats, including, but not limited to:

- Performing Union-wide cybersecurity risk assessments
- Supporting TSOs to set procurement recommendations
- Supporting TSOs to develop minimum and advanced cybersecurity controls
- Making available cybersecurity exercise templates at the entity, Member State, regional, and cross-regional levels
- Developing a proposal for the common electricity cybersecurity framework
- Supporting stakeholder involvement in the Cybersecurity European Stakeholder Committee, chaired by ACER.

Cooperation with Observer and Non-Member TSOs

As part of the Continental Europe Synchronous Area, Moldelectrica must act in accordance with the operational processes applicable to TSOs in this Synchronous Area. ENTSO-E provides guidance and support for Moldelectrica's implementation of these requirements.

In addition, ENTSO-E will continue its close cooperation with KOSTT to ensure the secure operation of the Continental European grid.

2 Grid Development and Grid Connections

Activities under this work area support TSOs in addressing key challenges related to grid development and grid connections, covering planning, supply chains, financing and permitting. They include the development of the Ten-Year Network Development Plan (TYNDP) and proposals for EU regulatory frameworks that facilitate investment and the development of internal, cross-border and offshore lines. They also encompass rules and requirements enabling the timely, efficient and system-compatible connection of grid users by TSOs, including the development and implementation of Connection Network Codes, economic regulation and supply-chain initiatives.

Ten-Year Network Development Plan (TYNDP) 2028

The TYNDP is ENTSO-E's network planning coordination tool and the European electricity infrastructure development plan. Mandated by Article 30(1)(b) and 48 of Regulation (EU) 2019/943 on the internal market for electricity and Articles 11-14 of Regulation (EU) 2022/869 on guidelines for trans-European energy infrastructure ('TEN-E Regulation'), the TYNDP provides a pan-European vision of the future power system and investigates how transmission infrastructure and storage projects contribute to the energy transition in a cost-effective and secure manner. The main role of the TYNDP is to identify where investments in various technical solutions in the electricity system based on the joint electricity and gas scenario simulations could most effectively address the expected system constraints with cross-border impact, thereby providing a fit-for-purpose infrastructure to enable the energy transition. The ENTSO-E TYNDP work is also a reference for complementary regional and national development plans.

The TYNDP is published by ENTSO-E every two years. One of its purposes as foreseen in the TEN-E Regulation is to feed into the process of establishing a list of Projects of Common Interest (PCIs) and Projects of Mutual Interest (PMIs). This process is coordinated by the European Commission in cooperation with the relevant Regional Groups. The TYNDP is the outcome of a two-year process with three major steps, starting with the development of scenarios outlining how the European energy system might evolve towards 2050.

Scenarios

Scenarios are the first key step and a crucial outcome of the TYNDP process. As outlined in Article 12 of Regulation (EU) 2022/869, ENTSOG, ENTSO-E and ENNOH (via the Gas & Hydrogen Decarbonisation Package, the recast gas regulation) are required to develop joint scenarios as the basis for their respective TYNDPs including network modelling, the identification of infrastructure gaps, and the assessment of projects through Cost-Benefit Analysis.

The work on the TYNDP 2028 joint scenarios begins in 2026 with initial steps comprising the development of a stakeholder engagement plan and discussions on the scenarios' framework. The scenarios' development will continue during 2027 until the submission of the scenarios to the EC, ACER, and EU Member States, planned in early 2028. Strong stakeholder engagement supports the process, with intense involvement of the Stakeholders Reference Group from the start.

Additionally, emerging sector coupling topics such as data-centre integration and electrification of heating and cooling will be assessed from an innovation standpoint.

Infrastructure Gaps Report and Offshore Network Development Plans

According to Articles 13-14 of Regulation (EU) 2022/869 and based on the scenarios, in 2028 ENTSO-E will deliver a study of future cross-border system needs ('Infrastructure Gaps Report') and Offshore Network Development Plans per sea basin. In 2027, most of the efforts related to the System Needs and Offshore Network Development Plans will be focused on the methodological advancements and choices to deliver the best value for society through infrastructure development. The System Needs Study shows where reinforcing cross-border transmission capacities throughout Europe could improve the cost-efficiency of the overall European energy system, while supporting and even accelerating Europe's energy transition.

There will be many stakeholder engagement opportunities throughout the process. They will be detailed in the TYNDP 2028 stakeholders' engagement plan that will be released for consultation early in 2027.

ENTSO-E will apply the mandate under Article 15(2) of the TEN-E Regulation on cost-benefit cost-sharing to the results of TYNDP 2026 and the latest non-binding Member State agreement on offshore RES.

Offshore Stakeholder Engagement

To ensure structured and transparent stakeholder engagement, ENTSO-E's Offshore Board Group combines active involvement with consistent information-sharing. Engagement takes place through events, bilateral exchanges, workshops and ENTSO-E communication channels such as the Offshore Hub.

ENTSO-E cooperates closely with government bodies, industry, and technology providers on topics including RES integration, sea-basin developments and system security.

Cost-Benefit Analysis (CBA) of transmission and storage projects

An infrastructure project can have various impacts on the electricity system. ENTSO-E has developed CBA Guidelines, approved by the EC, that describe how best to assess the impacts of each project, considering social, economic, and environmental factors. This framework assesses issues such as the potential for reducing emissions, stability, flexibility, capital and operating costs, mitigation of loss of power over long-distance transmission, and integration of renewable energy into existing systems, for example, by connecting offshore power to a grid.

The identification of system needs and the CBA of projects complement each other and help policymakers identify the most relevant projects at a given time. The System Needs Study considers the European electrical system in its entirety, from a system-wide perspective, while the CBA of projects evaluates each project individually by assessing its specific impact on the overall system.

In 2027, ENTSO-E will develop CBA Implementation Guidelines for TYNDP 2028, further detailing the methodology to be applied in TYNDP 2028. In accordance with Article 11 of Regulation (EU) 2022/869, ENTSO-E will start the preparatory work for the cost-benefit calculations of the project proposals to be included in the TYNDP 2028. The CBA results will be published in 2028 and will be used in the evaluation of projects to be included in the following Union list of Projects of Common Interest and Projects of Mutual Interest.

The current version of the CBA Guidelines was approved by the EC in 2024. Discussions on future improvements have been ongoing since 2025. As part of the Grids Package, the Commission's proposal of 10 December 2025 for a revised TEN-E Regulation foresees ENTSO-E publishing a new version of the CBA Guidelines by the end of 2027. General note on TYNDP work: On 10 December 2025, the EC published a proposal for a new TEN-E Regulation. At the time of preparation of this Annual Work Programme, the proposal remains in the co-legislative process. Depending on the final legal text, activities supporting the TYNDP 2028 cycle and subsequent cycles may therefore evolve.

Connection Network Codes

Three connection network codes (CNCs) define the technical capabilities of system users (i.e. power generating modules, demand facilities, and HVDC systems) to deliver system-supportive performance under all operating conditions, thereby contributing to the preservation or restoration of system security, especially in the event of exceptional out-of-range contingencies.

The three CNCs are:

- Regulation (EU) 2016/1388, establishing a network code on demand connection **(NC DC)**
- Regulation (EU) 2016/631, establishing a network code on requirements for grid connection of generators **(NC RfG)**
- Regulation (EU) 2016/1447, establishing a network code on requirements for the grid connection of high voltage direct current systems and direct current-connected power park modules **(NC HVDC)**

In 2022, according to Article 60 of Regulation (EU) 2019/943, the European Commission initiated the process of amending the three CNCs:

- In September 2023, as part of the relevant public consultation, ENTSO-E submitted its proposals for amending the **NC RfG** and **NC DC to ACER**. Following its assessment of stakeholders' proposals, ACER published its **final recommendation to the EC** on 19 December 2023.
- In addition, ENTSO-E participated in the amendment process of the **NC HVDC**. The public consultation on the NC HVDC was initiated by ACER in June 2024. It was based on the Expert Group on Connection Requirements for Offshore Systems **(EG CROS) phase II report** published in December 2023 as approved by the Grid Connection European Stakeholder Committee (GC ESC), chaired by ACER. ACER published its final recommendation to the EC in December 2024.

The EC launched the **"Have your say" consultation** on the amended version of the NC RfG on 8 July 2026, with feedback invited until 25 August 2026. Adoption of the amended versions of the NC DC and NC HVDC is expected to follow. A "Have your say" consultation is expected once each amended version of these network codes is published; however, the EC has not yet communicated a specific timeline. Once the three amended codes enter into force, Member States will have to implement them within a specified implementation period. ENTSO-E will remain available to ACER and the EC to support this process during 2027.

ENTSO-E is planning to continue working on the Implementation Guidance Documents **(IGDs)** throughout 2027, according to Article 58 of the NC RfG, Article 56 of the NC DC, and Article 75 of the NC HVDC. The IGDs are non-binding reports, addressed to TSOs and other system operators, that provide guidance and clarification on both technical and non-technical issues to support the national implementation of the CNCs, enhancing coordination and harmonisation where appropriate.

In 2027, ENTSO-E will update existing IGDs and/or publish new ones based on the amended CNCs, which will support their upcoming national implementation by TSOs and Member States. Depending on the final roadmap from the EC regarding the adoption of the amended network codes, ENTSO-E plans to develop the topics related to the NC DC, taking into account stakeholders' feedback shared during the AWP 2026 and through the GC ESC framework.

Regarding the possible topics to be addressed, the following examples are provided:

- Heat pumps
- Power-to-gas demand units
- Electrical storage modules
- Aggregation of different types of facilities
- Low-frequency demand disconnection and underfrequency defence plan

Once these new and updated IGDs are developed, they will be open for public consultation and will be published on the ENTSO-E website and the GC ESC platform. Subsequently, ENTSO-E will collect and address stakeholders' feedback and update the IGDs accordingly. A dedicated workshop to collect preliminary feedback from stakeholders may be organised by ENTSO-E before each public consultation.

In addition, ENTSO-E will carry out the annual process for monitoring implementation of the NC RfG and NC HVDC, as mandated by Article 59(2) of the NC RfG and Article 76(2) of the NC HVDC and requested by ACER in its letters of 14 March 2017. This process involves collecting information from TSOs and DSOs on the implementation of technical requirements by installed generation capacities and HVDC systems and submitting it to ACER by the end of June 2027.

Grid Connection European Stakeholder Committee (GC ESC)

Regarding stakeholder engagement, ENTSO-E co-organises the GC ESC with the EU DSO Entity, while ACER serves as chair. The committee aims to ensure effective stakeholder engagement in implementing the CNCs, including discussion of proposals for their amendment.

Through the GC ESC, stakeholders are informed of developments and provided with a platform to express their views and provide feedback on CNC implementation. This also covers related documents, such as ENTSO-E's IGDs. The GC ESC usually meets four times a year in a hybrid format, which is also expected in 2027.

Supporting the Implementation of the EU Grid Action Plan

In alignment with the **EU Grid Action Plan**, ENTSO-E will prioritise specific actions to enhance visibility of grid hosting capacity and technological maturity. Under **Action 6**, the EU DSO Entity and ENTSO-E are establishing a pan-European overview of available grid hosting capacities. A joint information portal, "Capacitypedia", aggregates links to national hosting-capacity pages and clarifies the published information by describing the practices and terms used by the respective system operators. Following the launch of Capacitypedia in 2026, ENTSO-E and the EU DSO Entity will continue updating and expanding the information available on the platform and identifying useful functionalities from national platforms. In addition, under **Action 7**, the DSO/TSO Technopedia platform will be further developed as a comprehensive knowledge repository for emerging grid technologies. The 2027 cycle will add relevant technology factsheets and enhance the platform based on internal and external feedback on both content and process.

Grid Infrastructure, Supply Chains and Grid Connection Management

In 2027, ENTSO-E will continue and deepen its strategic work on grid infrastructure implementation, supply-chain resilience and procurement frameworks in line with EU competition law, building on the strategic foundations established in 2026 across the Asset Implementation & Management roadmap, TYNDP supply-chain analysis and Grid Connections initiatives.

ENTSO-E will further strengthen its role as the European reference point for grid-infrastructure strategy by systematically linking system planning with delivery realities. This includes monitoring and translating emerging infrastructure risks, such as manufacturing-capacity constraints, long lead times for critical equipment (e.g., transformers, HVDC systems and cables), skilled-workforce shortages, permitting delays and connection bottlenecks, into coordinated ENTSO-E positions, policy input and practical initiatives for TSOs and European stakeholders. The work will also continue to advance TSO alignment on technical topics (e.g., HVDC and cable systems) to support European interoperability, thereby enabling scalable industrial deployment and long-term asset compatibility across Europe.

A key pillar of this work concerns strategic **public procurement and resilient supply chains**. ENTSO-E will build on its 2026 public position on public procurement for grid infrastructure, which highlights the need for procurement rules aligned with the realities of concentrated supplier markets, long project horizons and rapidly evolving technologies. The work will support EU policy processes, including revision of the Public Procurement Directives and industrial policy initiatives such as the Industrial Accelerator Act and Circular Economy Act, to ensure that procurement frameworks enable rather than constrain timely grid delivery through, for example, flexible procedures, innovation partnerships and stronger incentives for European manufacturing capacity to serve grid-expansion needs.

Efficient **grid connections** will constitute another focus area in 2027. Following the Grids Package and related EU guidance on efficient connections, ENTSO-E will support implementation across TSOs and stakeholders, including through dissemination of and follow-up to the ENTSO-E Grid Connections Position Paper (planned for release in Q3 2026). Building on this, ENTSO-E will monitor other EC and ACER initiatives in this area, promote best practices to streamline connection processes, clarify roles and responsibilities for grid connections and their links to grid development, improve transparency of connection pipelines and enhance coordination between TSOs, DSOs and project developers. This work is expected to help reduce connection times and ensure that electrification demand can be integrated in line with system planning and infrastructure availability.

Permitting and infrastructure delivery frameworks will also remain a strategic priority. ENTSO-E will support the implementation of the revised TEN-E Regulation and permitting provisions under the Grids Package by identifying barriers and good practices in transmission grid permitting, promoting predictable timelines and coordinated cross-border procedures, and contributing TSO expertise to EU and regional initiatives on infrastructure acceleration. Particular attention will be given to aligning permitting frameworks with long-term system planning outputs (TYNDP, offshore plans) and to ensuring that permitting processes keep pace with the scale and urgency of grid expansion required by stakeholders' connection requests, which are also driven by the EU's climate-neutrality goals.

Cooperation across the electricity value chain will underpin all activities. ENTSO-E will continue structured **engagement** with EU DSO Entity, T&D Europe, Europacable, RGI and other partners to advance joint roadmaps on resilient supply chains, grid connections, circularity and sustainable infrastructure delivery. These partnerships help align planning, procurement, industrial capacity and societal acceptance dimensions of grid expansion.

Economic Regulation and Finance

EU Grid Action Plan 9, 10 (Finance Advisory Group)

Action 9 of the 2023 EU Grid Action Plan tasked the Commission with launching, by the end of 2023, a reinforced process with stakeholders, including system operators, to assess obstacles to grid financing and explore financial instruments that can meet their investment needs. ENTSO-E aims to support policy and financial reforms to enable greater investment in grids, in line with the Action Plan. To this end, ENTSO-E has established the Finance Advisory Group, with the purpose of raising awareness about TSOs' financial challenges and opportunities, and the importance of protecting affordability. In 2027, ENTSO-E will continue to provide feedback to the Commission to ensure that TSOs' investment needs are considered in financial discussions.

Common Position on Tariffs

ENTSO-E will continue providing input to Action 8 of the EU Grid Action Plan on transmission tariff design and implementation, with the objective of ensuring that tariff methodologies provide appropriate incentives, remain cost-reflective, and support the fair allocation of costs among network users.

Amendment of Use of Congestion Income Methodology 2019/943 Article 19

In 2027, ENTSO-E will propose amendments to the use of the congestion income methodology, in accordance with Article 19(4) of Regulation (EU) 2019/943.

TTO Report

In 2027, ENTSO-E will publish its Transmission Tariff Overview (TTO) Report for 2026. The report compares TSO tariffs across Europe, examining the TSO cost component and how different tariff systems allocate costs to transmission users. To compare the data, ENTSO-E calculates an annual unit transmission tariff (UTT) for each participating country on a predefined base case.

3 Adequacy and Flexibility

This priority covers ENTSO-E's work on assessing resource adequacy at European level and supporting TSOs at national level. It includes the development of adequacy assessments across all time frames (from ERAA to Seasonal Outlooks), as well as activities supporting the identification of flexibility needs at system level. It also encompasses the design and implementation of frameworks enabling demand-side flexibility, notably through the Network Code on Demand Response and cooperation with DSOs.

Seasonal Outlook Reports: Summer Outlook 2027 and Winter Outlook 2027–2028

ENTSO-E's Seasonal Outlook Reports (Seasonal Adequacy Assessments, pursuant to Article 30(1)(m) of Regulation (EU) 2019/943 and Article 9(2) of the Risk Preparedness Regulation (RPR), Regulation (EU) 2019/941) investigate security of electricity supply at the pan-European level ahead of each winter and summer period. They are released twice a year, with a Summer Outlook in June and a Winter Outlook in December. Their role is to identify when and where system adequacy – the balance between supply and demand for electricity – is at risk. Outlooks are not forecasts of the future; rather, they identify potential vulnerabilities for the upcoming season that can be addressed proactively through preparation or mitigation measures. Each outlook is accompanied by a review of the previous season.

In 2027, ENTSO-E will publish a Summer Outlook by 1 June 2027 and a Winter Outlook 2027–2028 by 1 December 2027.

The Seasonal Outlooks reflect implementation of the methodology developed by ENTSO-E under Article 8 of the RPR and approved by ACER Decision No 08/2020 of 6 March 2020. The outlooks are based on data collected from TSOs and a probabilistic methodology.

European Resource Adequacy Assessment (ERAA) 2027

The Electricity Regulation places resource adequacy at the centre of the European energy policy context. ENTSO-E's yearly ERAA investigates whether the electricity system has sufficient resources to meet demand – also referred to as power system resource adequacy – in the coming decade, setting us on a net-zero pathway. The report is built on models and analyses of possible events that could adversely impact the balance between the supply and demand of electric power. The ERAA is a legal mandate of ENTSO-E in accordance with Article 23(2) of Regulation (EU) 2019/943.

The ERAA 2027 package will be published for consultation in November 2027. It will contain the findings of the study and describe the process, input data, main assumptions, and methodological advancements.

The delivery also builds on regular consultations and workshops or webinars with stakeholders throughout the full project timeline.

Regulation (EU) 2024/1747, amending Regulations (EU) 2019/942 and (EU) 2019/943 as regards improving the Union's electricity market design, foresees a reopening of the ERAA methodology. ACER approved the amended ERAA methodology in Decision No 04/2026 of 13 March 2026. An implementation plan was developed in 2026 to guide the progressive evolution of ERAA, starting with ERAA 2027.

Flow-Based Domain Generator

The objective of this project is to develop a robust application for generating flow-based domains for ERAA and the Seasonal Outlooks. The tool will aggregate 8,760 sets of flow-based parameters into representative sets that can be implemented in market simulators.

The outcome will be a tool that TSOs can use for national studies. Implementation may start in 2027.

Flexibility Needs Assessment

The central role of flexibility in future system operation was underlined by Regulation (EU) 2024/1747, which amended Regulation (EU) 2019/943 to require ENTSO-E and the EU DSO Entity to jointly develop a methodology for assessing flexibility needs at Member State level. The methodology was approved by ACER in July 2025. The biennial analyses conducted by TSOs and DSOs pursuant to the methodology serve as input to national reports on estimated flexibility needs, adopted by regulatory authorities or another authority or entity designated by a Member State.

The reports will be used to define indicative national objectives for non-fossil flexibility and can serve as a basis for Member States to develop support schemes for non-fossil flexibility capacity. ENTSO-E will continue to support TSOs before and during the second implementation phase of this methodology, starting in July 2027, and provide guidance on challenges identified at national level.

Flexibility Interactions at the Transmission Level

Building on the ENTSO-E report on System Flexibility Needs for the Energy Transition[1] that quantified pan-European flexibility needs, a new study analyses the synergies and conflicts between different transmission-level services that utilise available flexibility.

The study seeks to identify how flexibility can be optimally deployed in a system-friendly manner. The final report is expected to be published in 2027.

In addition, in 2027, ENTSO-E will analyse the role and impact of long-duration energy storage in future European power systems.

Network Code on Demand Response

Following ACER's submission to the EC of Recommendation No 01/2025 containing a reasoned proposal for establishing the NC DR, and the EC's targeted stakeholder consultation in 2025, ENTSO-E, in cooperation with the EU DSO Entity, followed and supported the EC's NC DR adoption process and will work to implement the NC DR from 2027.

In particular, in 2027, ENTSO-E, in cooperation with the EU DSO Entity, will follow the mandates stemming from the adopted NC DR, including but not limited to:

- Drafting EU-wide methodologies
- Cooperating closely with relevant organisations to draft, improve and support the development of standards related to implementation of this Regulation
- Cooperating with ACER to facilitate discussions on aggregation models, baseline methodologies and local flexibility markets through the Demand Response European Stakeholder Group (DRESG).

Moreover, based on the NC DR-related amendments to the EB GL, SO GL and Connection Network Codes adopted by the EC in 2026, ENTSO-E intends to identify aspects that need to be addressed under the existing methodologies and that may require action at the European level. Therefore, ENTSO-E will continue working to ensure consistency between NC DR and other relevant EU regulations, network codes and guidelines. In addition, it is expected that amendments to the balancing legal and regulatory frameworks will be required in 2027, including the Imbalance Settlement Harmonisation Methodology (ISHM) and the mFRR and aFRR Implementation Frameworks. Throughout the process, ENTSO-E and the TSOs will engage with relevant stakeholders to gather feedback, ensure transparency, and inform the development of the proposed solutions.

1 Executive Report – System Flexibility Needs for the Energy Transition

4 Operations of the Future Power System

This priority includes ENTSO-E activities that support TSOs in the reliable and efficient operation of the evolving power system. It covers coordinated analysis to optimise the use of existing infrastructure and enhance operational practices, as well as the promotion of EU market-design frameworks aligned with system and physical constraints.

System Operations Guidelines

Commission Regulation (EU) 2017/1485 establishing a guideline on electricity transmission system operation (SO GL) sets out harmonised rules to ensure operational security, frequency quality and efficient use of the interconnected system and resources. ENTSO-E and TSOs at pan-European, Synchronous Area (SA) and regional levels carry out several tasks to implement the SO GL and the methodologies that stem from it.

ENTSO-E facilitates work at the pan-European level, whereas TSOs organise the activities in their respective regional groups (e. g., SAs and CCRs). Other developments regarding the implementation of the SO GL are communicated regularly through the System Operations Committee.

In 2027, ENTSO-E will continue working to ensure consistency between the SO GL and network codes and guidelines. ENTSO-E will continue preparing for revision of the SO GL, ensuring that European regulation remains fit to safeguard operational security in a new energy landscape (e. g., with the integration of large volumes of renewable generation and storage and growing electricity use). In this context, ENTSO-E will be ready to propose relevant regulatory and methodological amendments related to the SO GL and underlying methodologies such as CSAM and the common grid model (CGM) methodology.

ENTSO-E Awareness System

The ENTSO-E Awareness System for real-time data exchange for pan-European use (EAS, Article 42 of the SO GL) aims to improve coordination of system operation and provide all TSOs with equivalent real-time information displays, ensuring a common overview of transmission-system status. EAS comprises different applications: EAS Legacy, the Wide Area Measurement System (WAMS) and EAS NextGen. Phase 2 of WAMS, which has been ongoing during 2026, involves adding 80 phasor measurement units (PMUs)/bay.

EAS NextGen, currently in the implementation phase, will provide a blackout-proof approach in accordance with ENTSO-E's hosting strategy by hosting the application on TSOs with satellite hubs. EAS NextGen will replace the existing Siemens EAS Legacy system in 2027.

The Central Security Information and Event Management system is being finalised to enhance cybersecurity. In March 2026, EAS logs were successfully changed to accept all keep-alive messages. The next step is to receive these messages every hour from all hosts. For EAS NextGen, security logs and security scenarios in CSIEM should be ready for production from March 2027.

Artificial Intelligence (AI) and Digitalisation

ENTSO-E will continue to advance Artificial Intelligence (AI) as part of the TSO toolkit in line with the RDI Roadmap 2024–2034 and the EU Digitalisation of the Energy System Action Plan. AI activities will evolve from isolated applications towards reference frameworks for trustworthy and explainable AI, including model validation principles, operational readiness criteria, and alignment with the EU AI Act. A key focus in 2027 will be the development of the governance model for a pan-European Foundational Model of the EU power system, aligned with European Commission initiatives on energy foundational models. This work will be encompassed by tasks “AI grids Foundational Models for AI in energy”, “AI in TSO Operations: Implementation blueprint” and “AI decision support systems for TSO control room operations”.

AI and digitalisation activities will remain closely coupled with the following important topics not subject to a legal mandate:

- WAMS and PMU-based observability, enhancing dynamic security assessment, oscillation monitoring, and pan-European situational awareness (Task “Advancing TSO Dynamic Security Assessment: WAMS integration and best practices”);
- Digital Twin initiatives, enabling predictive and adaptive system steering through interoperable and federated architectures (Task “Enhancing real-time grid observability through digital twins: use cases, best practices and integration pathways”);
- Vendor-Agnostic Solutions (VAS), ensuring modular, standards-based integration of functionalities into next-generation control centre ecosystems (Task “Advancing next-gen control centers through vendor agnostic architectures, capability mapping and orchestration frameworks”).

Integrating EU Space Programme Capabilities (EUSPC) into TSO Resilience

In 2027, ENTSO-E will continue its work on leveraging EU Space Programme capabilities for TSOs' resilience. The objectives of this task are to enhance grid resilience and security (via Galileo PRS and GOVSATCOM/IRIS), optimise costs and operations (using Copernicus data), ensure regulatory compliance, and drive innovation with ESA and EUSPA. Overall, this task will contribute to supporting operations of the power system while facilitating cooperation with EU institutions, ESA and EUSPA.

Preparing for the Future Offshore System

Political ambitions for offshore energy reaffirm the strategic importance of offshore wind and ocean energy across all European sea basins. ENTSO-E's role is to proactively enable these ambitions by supporting a secure, affordable and well-coordinated offshore energy system. Addressing challenges such as system security, cost-sharing, supply-chain constraints and permitting requires effective cross-border cooperation. ENTSO-E contributes its technical expertise to inform regulatory developments for an increasingly complex and interconnected offshore landscape.

Although onshore and offshore infrastructure form one integrated power system, their operational and regulatory differences require careful consideration. ENTSO-E's Offshore Roadmap (2025) highlights the key issues that transmission system operators must address to advance offshore development, including offshore geographical zones, offshore balancing, frequency control, dynamic stability, ramping, governance and market frameworks.

As a living document, the Offshore Roadmap will be updated in the coming years to reflect technological progress, regulatory evolution and system needs, and will continue to support coordinated regulatory alignment for offshore integration.

In 2027, ENTSO-E will continue working on assessing the current regulatory framework for system operation to identify possible amendments that may be required to ensure the secure operation of both offshore and onshore grids.

As HVDC systems are deployed in greater numbers and their complexity increases, ensuring their reliability becomes increasingly important. In 2027, ENTSO-E's Innovation branch will continue its work on HVDC reliability, aiming to identify coordination frameworks for mature HVDC networks and clarify responsibilities among relevant actors. This work will follow up on the previous publication, "Data Specifications for building HVDC Reliability assessment".

ENTSO-E is developing an offshore balancing concept that aligns with European regulations and facilitates the integration of offshore bidding zones (OBZs) (which involve only generation and minimal or no offshore demand) and offshore wind farms into the European balancing markets.

Enhancing TSO-DSO Collaboration

Close coordination between system operators across voltage levels is a key enabler of affordable, secure and decarbonised electrification. EU legislation emphasises the importance of this collaboration and identifies several joint activities between TSOs and DSOs. ENTSO-E and the EU DSO Entity, as the representative associations for European TSOs and DSOs, are committed to facilitating this collaboration and developing common deliverables.

The Memorandum of Understanding between ENTSO-E and the EU DSO Entity provides for a joint annual work plan developed by the two associations that identifies the main areas of collaboration and common activities for the year.

The joint annual work plan identifies regulatory implementation priorities guided by EU legislation, official European Commission (EC) communications and other formal mandates, as well as joint strategic initiatives stemming from a shared ambition to develop a reliable, resilient and secure power system for a carbon-neutral Europe. These topics serve as a priority list for coordinated engagement. Increased coordination between system operators is crucial to addressing operational concerns, including the need for controllability and observability as the penetration of RES and other assets at distribution level increases.

Electricity Market Design

In accordance with Article 69 of Regulation (EU) 2019/943, as amended by Article 19(17) of Regulation (EU) 2024/1747, the European Commission is required to conduct a comprehensive review of the Regulation by 30 June 2026 and, if deemed appropriate, submit a legislative proposal.

A central development will be the application of the obligation for Member States to structure direct price support for new power-generating facilities through two-way Contracts for Difference (CfDs) or equivalent instruments for contracts concluded from 17 July 2027 onwards. As this requirement becomes operational, increasing attention will be given to the interaction between long-term contracting frameworks, wholesale price formation, cross-border competition and system operation. ENTSO-E will continue to provide system-level analysis and guidance on critical aspects such as bidding behaviour and dispatch, asset design and siting, risk hedging, and regulatory risk.

In parallel, the indicative national objectives for non-fossil flexibility will move into an implementation phase. Where market signals alone do not sufficiently mobilise demand response and storage, Member States may introduce non-fossil flexibility support schemes, including payments for availability of clean flexibility capacity. Ensuring transparent monitoring, cross-border coordination and consistency with adequacy assessments will be essential to avoid fragmentation and maintain efficient market functioning.

Finally, affordability and competitiveness will remain central policy priorities, as reflected in the EU Action Plan on Affordable Energy and broader objectives related to industrial competitiveness. In this context, the link between security of supply and cost-efficiency will receive increased attention.

Common Grid Model

The Common Grid Model (CGM) and the Operational Planning Data Environment (OPDE) are critical enablers of operational planning coordination and security of supply at the pan-European level. Ensuring greater visibility and insight into pan-European interconnection flows is a critical step in the broader effort to strengthen grid security, ensure cost-efficient operation, and increase cooperation among European TSOs and RCCs.

The legal basis for the CGM is established in three network codes and guidelines: the SO GL (Articles 64 and 114), the CACM Regulation (Article 17) and the FCA Regulation (Article 18). The legal basis for OPDE is established in Regulation (EU) 2019/943 on the internal market for electricity (Article 59) and the SO GL (Article 114). The CGM is a prerequisite for several operational tasks harmonised in the network codes and guidelines, including, but not limited to, CCC and CSA.

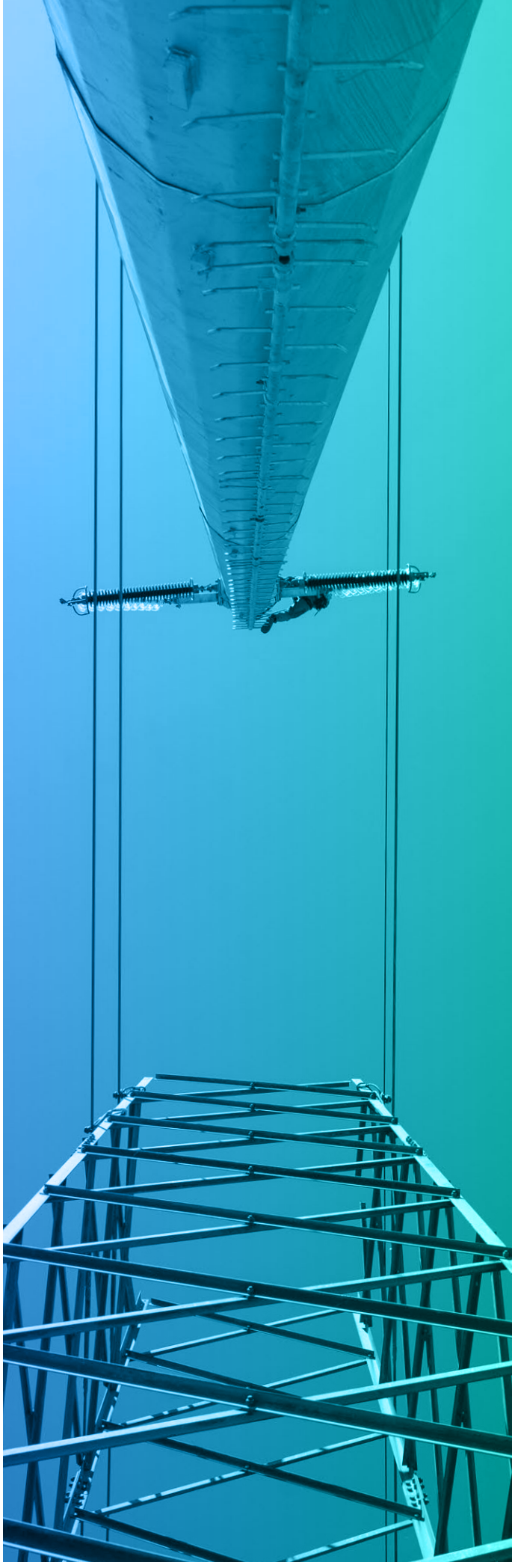
A CGM contains the individual grid models (IGMs) of EU and non-EU TSOs, covering time frames from one year before real time to one hour before real time. Following quality assessment and a pan-European alignment process, TSOs' IGMs are provided to RCCs, which merge them into a pan-European CGM and deliver the operationally ready CGM to other tasks via OPDE. In 2027, the focus on delivering fit-for-purpose CGMs for the various pan-European and regional RCC tasks continues to be a priority. The CGM Action Plan Project, under the guidance of the System Operations Committee (SOC), will facilitate the delivery of operational CGMs. Close monitoring, as well as reporting to external stakeholders such as ACER and NRAs, is also expected. A key target will be the delivery of high-quality grid models, enhanced functionality of the OPDE IT infrastructure through the development of OPDE 2.0, readiness and complete delivery of grid data, and active participation from the community.

Data Management (BDM)

BDM (Boundary Data Management) is one of the business applications supporting the Operational Planning Data Environment (OPDE) for creating CGMs (Common Grid Models) and TYNDP long-term planning. It enables the management of boundary data used to provide consistent boundary sets for validating and building IGMs (Individual Grid Models) and merging IGMs into CGMs. BDM will manage common/reference data used in the CGM-building process and support the agreement process for boundary-data changes. ICT activities in 2027 will include overseeing development; assuring security, compliance and quality; budget planning and financial reporting; managing commercial and contractual frameworks for development and hosting; and preparing disaster-recovery and business-continuity plans (DR/BCP).

CGMES Validation Tool (VT)

The objective of this project is to develop a high-performance open-source validation tool for CGMES and Network Code Profiles, ensuring compliance with the Regional Coordination Processes Data Exchange Specification (RCP DES) and Common Information Model (CIM) standards. This tool will enable transmission system operators (TSOs) and regional coordination centres (RCCs) to validate and visualise exchanged data for operational planning and post-CGM services, mitigating risks associated with vendor lock-in. In 2027, the CGMES VT will continue to be developed to maintain compliance with RCP DES.



Operational Planning Data Environment (OPDE) Service Delivery

Operational Planning Data Environment (OPDE) service delivery is a fundamental enabler of reliable and efficient grid operations as an outcome of coordinated RCC services, whether pan-European or regional, including the Common Grid Model (CGM), Outage Planning Coordination (OPC) and Coordinated Capacity Calculation (CCC).

OPDE is a combination of several components, comprising Platform Services (e.g., ECCo SP) and Business Services (e.g., OPDM and CGMA), and uses the Physical Communication Network (PCN).

ENTSO-E is focused on advancing several initiatives across four strategic areas:

CGM Action Plan

In 2027, the OPDE Service Delivery Team will support the SOC-approved CGM Action Plan, particularly by: (a) supporting TSOs in improving their grid models; (b) reassessing the OPDE roadmap to onboard new operational business services and enhance existing functionality to ensure timely and stable delivery of CGMs; and (c) assessing the implications of transitioning to the latest CGMES standard.

Service Adoption

As the use of CGMs in other RCC services increases (both as part of development/trialling and ultimately in live operation), it is important that the designs/processes associated with OPDE are resilient, robust and performant. To ensure proactive planning of the OPDE Service Delivery Team, the outcomes of the Coordinated Planning activities (led by Steering Group Regional Coordination) will be used to develop an OPDE Adoption Roadmap and associated impact assessment considerations.

OPDE Re-Architecture

The Architectural Review of the OPDE Platform was initiated to address perceived flaws with the current OPDE implementation. This review has identified three broad options, within which there are some sub-options. The proposals require some significant changes to the OPDE design and components, which will affect the OPDE Service Delivery Team.

Under the latest proposals, the new OPDE architecture was procured in 2025, is being developed and tested in 2026, and will be migrated in 2027 (with some level of parallel running assumed).

As a result, the OPDE Service Delivery Team will develop and execute specific plans with respect to: (a) OPDE Service Design, and (b) OPDE Architecture Migration. Furthermore, the OPDE Service Delivery Team will develop a plan (and associated resource proposals) with respect to the "Enduring OPDE Service Design", reflecting a post-architecture implementation operational model.

System Operations Stakeholder Engagement

System Operations European Stakeholder Committee

The System Operations European Stakeholder Committee (SO ESC) is a platform that aims to:

1. Contribute to a more informed decision-making process for the methodologies and rules for the SO GL and NC ER implementation
2. Contribute to monitoring progress in the SO GL and NC ER implementation process
3. Serve as a platform to share general views on SO GL and NC ER implementation, enabling stakeholders to express their views, receive feedback, and discuss proposals for amendments

ENTSO-E and the EU DSO Entity organise SO ESC meetings, chaired by ACER, four times a year. The SO ESC supports collaboration on topics relevant to the two associations and European power-system operation. It aims to complement, not replace, legal obligations for stakeholder consultation and information under the SO GL and NC ER during implementation. Topics discussed include implementation actions under the SO GL and NC ER, such as the CGM; updates from Expert Panel investigations into grid incidents; SO GL development and amendments; and development of methodologies, such as the probabilistic risk assessment (PRA) methodology. The SO ESC's work programme depends on the timing of deliverables, the initiation of new processes and potentially relevant incidents.

System Operations Coordination Group

ENTSO-E, ACER, and NRA members form the System Operations Coordination Group (SO CG) to monitor the implementation of the SO GL and NC ER. The SO CG meets four times per year to discuss developments and follow up on the implementation of codes.

5 Market Integration and Market Transparency

This priority includes ENTSO-E's work to advance electricity market integration at EU and regional levels, including support for TSOs in implementation projects and improvements to related processes, products and platforms. It includes the development, amendment and coordinated implementation of market network codes, notably on capacity allocation and congestion management, electricity balancing and forward markets. It also encompasses initiatives to enhance market transparency and facilitate cooperation among TSOs, supporting efficient and integrated market functioning.

Forward Capacity Allocation

The FCA Regulation (EU) 2016/1719 entered into force in September 2016, establishing rules for cross-zonal capacity calculation and allocation in the forward time frame. This Regulation is implemented at a pan-European level. Although the core framework has been in place for several years, implementation of the methodologies remains ongoing, and regular amendments to them are introduced to ensure full system consistency.

Furthermore, in line with Article 9 of Regulation (EU) 2024/1747, the European Commission has already carried out the required impact assessment on measures to improve the ability of market participants to hedge price risks in the internal forward electricity market. ENTSO-E and All TSOs will fulfil the requirements for developing the terms and conditions once the amended FCA Regulation (FCA 2.0) enters into force.

FCA Review of the Harmonised Allocation Rules and Single Allocation Platform Methodologies

The Harmonised Allocation Rules (HAR), developed under Article 51 of the current FCA Regulation, are scheduled for review in 2027, with work starting at the end of 2026. According to Article 68(5) of the HAR, these should be reviewed at least every two years by the Single Allocation Platform (SAP) and the relevant TSOs, with the participation of registered market participants through public consultation.

In 2026 TSOs and JAO reviewed the HAR and SAP methodologies outside the biennial review cycle and proposed amendments for an improved collateral solution, subject to the approval of ACER. Work on the implementation of this improved solution for collaterals will continue in 2027 by both TSOs and JAO, and it is expected to require another review of the HAR methodology in 2027 to incorporate additional amendments relevant to the improved solution for collaterals which may arise at a later stage.

FCA Long-Term Flow-Based Allocation Coordination under the Approved Methodologies

TSOs and the Single Allocation Platform will continue implementation of the long-term flow-based allocation (LTFBA) project in the Core and Nordic capacity calculation regions (CCRs), respectively, following the go-live in November 2026 to implement an improved solution for collaterals. The LTFBA project includes two major workstreams for the 2026 go-live: (1) the process for calculating flow-based capacity, developed by the TSOs of the respective capacity calculation region (CCR); and (2) the process for allocating capacities from the flow-based domain, developed by the Single Allocation Platform with the support of TSOs from both CCRs, Core, and Nordics (capacity allocation). Following the LTFBA go-live in November 2026, TSOs and the SAP will continue with the implementation of the improved solution for collaterals.

TSOs are fully committed to continuing to implement LTFBA and the improvements needed for a well-functioning long-term market, and are working intensively with national regulatory authorities (NRAs) and ACER to achieve this goal.

FCA Regulation Amendment Preparation and Implementation: Potential Requirement for FCA 2.0

The Commission concluded the impact assessment mandated by Article 9 of Regulation (EU) 2024/1747 in January 2026. This will lead to an amendment of the FCA Regulation, with a draft expected to be issued by the Commission in 2026.

ENTSO-E will analyse both the impact assessment and the draft. After the entry into force of the amended FCA Regulation, All TSOs and ENTSO-E will immediately begin working on its implementation.

Capacity Allocation and Congestion Management

The Capacity Allocation and Congestion Management (CACM) Regulation (EU) 2015/1222 establishes the framework for the operation of the single European electricity market. It sets out rules for the coordinated calculation and allocation of cross-zonal capacity in the day-ahead (DA) and intraday (ID) timeframes and provides the legal basis for the operation of the Single Day-Ahead Coupling (SDAC) and Single Intraday Coupling (SIDC) across Europe. The Regulation is implemented at a pan-European level.

Although the core framework has been in place for several years, the implementation of the terms, conditions and methodologies (TCMs) required under the CACM Regulation remains ongoing.

These methodologies are regularly updated and amended to reflect the evolution of the electricity markets and to ensure the consistency and efficiency of market coupling processes.

In addition, a revision of the CACM Regulation is currently underway. Following ACER's recommendation for amendments to the CACM framework, the European Commission has prepared a revised version of the Regulation (CACM 2.0), which is expected to enter into force in the coming years.

ENTSO-E and all TSOs will fulfil the requirements for developing the relevant terms, conditions and methodologies once the amended CACM Regulation (CACM 2.0) enters into force.

CACM Assessment of the CID Methodology

On 21 December 2023, ACER adopted Decision No 16/2023 approving the amendment of the congestion income distribution (CID) methodology for European electricity markets, in accordance with Article 73 of the current CACM Regulation. The amended methodology addresses the management of unintuitive flows resulting from allocation constraints and Advanced Hybrid Coupling (AHC) by establishing a virtual hub approach as identified in Article 2(2)(h) of the CID methodology.

Pursuant to Article 10(6) of the CID methodology, TSOs are required to assess the results of applying the CID methodology to ensure compliance with the requirement for fair and non-discriminatory treatment during the development, testing, and first year of implementation of the cross-CCR mechanisms. In this context, ENTSO-E will support All TSOs in carrying out the assessment in accordance with the obligations set forth under Article 10(6).

All TSOs CACM Capacity Calculation Region (CCR) Review

Depending on implementation of a future EU–third-country agreement, a CCR-related update may be needed in 2027 to ensure alignment with regional process and governance developments.

This may involve an amendment to the Capacity Calculation Region definition methodology prepared in accordance with Article 15 of the current CACM Regulation.

Annual CACM Cost Report

Article 80(1) of the current CACM Regulation obliges NEMOs and TSOs to submit an annual report to the regulatory authorities, detailing the costs associated with the establishment, amendment, and operation of the Single Day-Ahead Coupling (SDAC) and Single Intraday Coupling (SIDC). The report must clearly identify and separately outline costs directly related to SDAC and SIDC, ensuring they are auditable.

Additionally, the report must include detailed information regarding contributions made by TSOs to NEMO costs, as required under Article 76(2) of the CACM Regulation. NEMOs and TSOs are expected to prepare and submit the annual CACM Cost Report in 2027.

NEMOs Review of the Algorithm Methodology in Cooperation with TSOs

At ACER's request, NEMOs might be required to amend the algorithm methodology, pursuant to Article 37(6) of the current CACM Regulation, in cooperation with the TSOs. However, this obligation is contingent upon the entry into force of CACM 2.0. Under CACM 2.0, the review of the algorithm methodology is no longer foreseen.

If CACM 2.0 has not entered into force by 2027, NEMOs may proceed with amending the algorithm methodology under the provisions of the current CACM Regulation, with TSOs participating in the review phases during 2027.

Technical Report on Bidding Zones Configuration

In 2027, it is expected that ENTSO-E will deliver to ACER a Technical Report on bidding zones covering the years 2024, 2025, and 2026. Preparatory work will begin in 2026, particularly in view of potential updates introduced by CACM 2.0, which may redefine the concept of structural congestions and directly impact the content of the report.

The Technical Report will provide an overview of structural and other major physical congestions in the EU, analyse power flows not resulting from capacity allocation, and include transparent reporting on congestion income, firmness costs, and the implementation of the CEP's 70% margin available for cross-zonal trade.

CACM: Measures to Increase Transmission Capacities

In response to a request from the Energy Union Task Force for ACER to assess measures to increase cross-zonal capacity and flexibility, particularly in response to high electricity prices in South-Eastern Europe, ACER and TSOs began cooperating to evaluate potential measures based on TSO best practices.

CACM Regulation Amendments Implementation: Definition of Structural Congestions

The latest available draft of CACM 2.0 requires All TSOs to develop a methodology for identifying congestion. The methodology shall clarify the procedural and computational steps for identifying physical congestion, as defined in Article 2(18) of CACM; congestion, as defined in Article 2(4) of Regulation (EU) 2019/943; and structural congestion, as defined in Article 2(6) of Regulation (EU) 2019/943. This complex work is expected to commence in 2027.

CACM Regulation Amendments Implementation: Transmission Access Guarantee

The latest available draft of CACM 2.0 requires All TSOs to develop a methodology for the transmission access guarantee. Therefore, depending on the evolution of the text as well as its entry into force, TSOs will develop a methodology intended to establish the principles and procedures for compensating offshore renewable electricity generation plants located in offshore bidding zones connected to two or more bidding zones when transmission capacity reductions prevent them from exporting their available generation to the EU interconnected market.

CACM Regulation Amendments Implementation: Measures to Reduce Decoupling Events

In the context of CACM 2.0, ACER, the European Commission, national regulatory authorities, NEMOs and TSOs are assessing mitigation measures to improve decoupling processes, including the potential introduction of a new fallback process.

As part of this work, ENTSO-E will coordinate TSOs' feasibility assessments and preparations for implementing a postponed nomination deadline. This measure aims to prioritise market-coupling processes and reduce the likelihood of decoupling events.

Electricity Balancing

Regulation (EU) 2017/2195 (the EB Regulation) establishes detailed guidelines for electricity balancing across Europe. In accordance with this Regulation, ENTSO-E will continue advancing its implementation and the development of related methodologies throughout 2027.

This work involves a range of tasks for TSOs at both pan-European and regional levels, with ENTSO-E facilitating activities at the pan-European level.

European Balancing Platforms

ENTSO-E will continue coordinating the European balancing platforms with ENTSO-E structures, ensuring effective collaboration and information exchange between regulatory authorities and stakeholders.

Following regular practice, ENTSO-E will organise at least one annual public workshop on the European balancing platforms.

Development of EB Regulation Amendments

The European Commission expects to begin revising the EB Regulation by the end of 2028. In line with this, ACER has begun developing potential policy options for the future of balancing.

In 2026, ENTSO-E is assessing the successes and challenges of the current EB Regulation and, in 2027, will provide input on the policy options and guidance for addressing current and future balancing needs that may result in amendments to the EB Regulation.

Co-Optimisation (R&D)

In Decision No 11/2024, issued on 23 September 2024, ACER adopted the amended methodology for the price-coupling algorithm and the continuous-trading matching algorithm. As required by Article 11 of Annex I to this Decision, Nominated Electricity Market Operators (NEMOs), in collaboration with TSOs, are carrying out research and development (R&D) activities to assess the technical feasibility, impacts and implications of integrating co-optimisation into price coupling. This work will be structured around several milestones, including delivery of the R1, R2 and R3 R&D Reports to ACER. The requirements for each R&D report are outlined in Articles 4(15) and 4(16) of **Annex I** to ACER Decision No 11/2024. The R&D outcomes are expected to inform identification of the most appropriate approach to potentially implementing co-optimisation and estimation of a realistic timeline for its introduction into the day-ahead market-coupling algorithm.

Following replanning by NEMOs and TSOs and subsequent confirmation by ACER, the second report (R2) is expected to be submitted to ACER in Q1 2027, covering the areas listed in points (d) to (g) of Article 4(15) of Annex I, including initial simulation results. R2 must conclude on the technical feasibility of the options selected in the R1 Report, which was submitted to ACER on 28 November 2025. The R3 report will follow submission of R2; detailed planning still needs to be clarified with ACER based on the exact scope. Once all R&D phases have concluded, the outcomes will inform further discussions among NEMOs, TSOs and ACER on the next steps for co-optimisation.

Imbalance Settlement Harmonisation Methodology

As foreseen by Article 12(3) of the Imbalance Settlement Harmonisation methodology (ISHM), which was issued in accordance with Article 52(2) of the EB Regulation, All TSOs shall assess the need for further harmonisation of the imbalance settlement.

In agreement with ACER, and as reflected in its Opinion 03/2025 on the first amendment of the ENTSO-E Monitoring Plan, carried out pursuant to Article 63(2) of the EB Regulation, the final assessment report is planned for submission by July 2027. In Q3–Q4 2027, and subject to the outcomes of this assessment, All TSOs may develop amendments to the ISHM. These amendments would be based on the assessment results and would also take into account applicable requirements arising from the implementation of the Network Code on Demand Response (NC DR).

Standard Products for Balancing Capacity and Balancing Energy

In accordance with Article 25(3) of the EB Regulation, All TSOs shall review the list of standard products for balancing energy and balancing capacity every two years. The assessment is being carried out in 2026, with further detailed analysis continuing in 2027 before the subsequent assessment is submitted in 2028.

Efficiency and Effectiveness Assessment of the European Balancing Platforms

In accordance with Article 13(8) of the aFRR Implementation Framework (IF), Article 13(7) of the mFRR IF, and Article 18(2) of the Imbalance Netting IF, the European balancing platforms shall publish an efficiency and effectiveness assessment of the European balancing platforms by July 2027.

This report shall be submitted to ACER every second year; however, it will not be made publicly available.

Evaluation of the Impact of Scheduled Counter-Activations for the mFRR Platform

In accordance with Article 13(3) of the mFRR IF, TSOs shall assess the results of monitoring the impact of scheduled counter-activations on balancing energy prices as well as on the efficient functioning of the mFRR Platform and the intraday market.

This assessment will lead to a recommendation by TSOs on whether scheduled counter-activations should be maintained or discontinued. The report will be published by July 2027.

Implementation Frameworks (IF) Survey

In accordance with Article 20 of the IF of the mFRR and aFRR platforms, All TSOs must develop a common harmonisation proposal (CHP) for the harmonisation of terms and conditions (T&C) for balancing service providers (BSPs).

An IF Survey will be launched in 2027 to identify further harmonisation needs and potential amendments to the IFs.

Market Monitoring and Reporting Activities

In accordance with Article 82 of the CACM Regulation, Article 63 of the FCA Regulation, and Article 59 of the EB Regulation, ENTSO-E will publish the annual Market Report, covering the progress made in the implementation of CACM, FCA, and EB Regulations to bring the internal European electricity market closer to full realisation.

Furthermore, all relevant NEMOs and TSOs will provide an annual report explaining the costs of establishing, amending, and operating single day-ahead and intraday coupling in accordance with Article 80 of the CACM Regulation. Similarly, an annual report pursuant to Article 23 of the EB Regulation will be prepared, focusing on the costs of establishing, amending, and operating the European balancing energy platforms.

Furthermore, in accordance with ACER's Opinion No 03/2025 of 16 April 20252 on the first amendment of the ENTSO-E Monitoring Plan in accordance with Article 63(2) of EB Regulation, several other reporting and assessment obligations are expected in 2027 in cooperation with European balancing platforms, such as:

- Accession roadmaps of the European balancing platforms, in accordance with Article 5(4) of the aFRR and mFRR Implementation Frameworks (every six months)
- European balancing platform implementation and operation monitoring report, Article 13(1) of the aFRR and mFRR Implementation Frameworks (annually)
- AWP of the European balancing platforms, Article 15 of the aFRR and mFRR Implementation Frameworks, Article 11 of the IN Implementation Framework (annually)

Data Provision to ACER

Several guidelines require TSOs to provide data to ACER for monitoring purposes. Article 82(4) of the CACM, Article 63(3) of the FCA, Article 63(3) of the EB GL, and Article 14 of the SO GL require ENTSO-E and ACER to produce a list of relevant information to be communicated by TSOs to ACER via ENTSO-E. ENTSO-E maintains a comprehensive digital data archive of this information in a standardised format.

- The CACM list of information was agreed upon in 2018 and is gradually being implemented by CCRs as their capacity calculation methodologies go live. ENTSO-E will continue maintaining a comprehensive digital data archive in a standardised format of the information. The list may be updated if deemed necessary by the Parties.
- The FCA list of information was agreed upon between ENTSO-E and ACER. ENTSO-E will continue maintaining a comprehensive digital data archive in a standardised format of the information. The list may be updated if deemed necessary by the Parties.
- The SO GL list of information was amended and agreed upon between ENTSO-E and ACER in 2023, and implementation is ongoing.
- The EB GL list of information was agreed upon between ENTSO-E and ACER in 2025, and it was implemented in February 2026.

2 ACER's opinion No 03/2025 on the first amendment of the ENTSO-E Monitoring Plan in accordance with Article 63(2) of the EB Regulation.

Inter-TSO Compensation (ITC)

ITC Mechanism

The Inter Transmission System Operator Compensation (ITC) Agreement is a multi-party agreement between ENTSO-E and its member TSOs, KOSTT and National Grid ESO. It provides a single framework for compensating European TSOs for the costs associated with hosting transit flows. The ITC mechanism is governed by Article 49 of Regulation (EU) 2019/943 and Commission Regulation (EU) 838/2010, which sets out the guidelines for the ITC mechanism and a common regulatory approach to transmission charging. Amprion and Swissgrid serve as the data administrators of the ITC Agreement, carrying out tasks mandated to ENTSO-E on behalf of its member TSOs. Each data administrator covers a specific geographical area.

In 2027, as in previous years, ITC Parties will provide and verify the values used to calculate the annual perimeter fee, such as the cost of losses, vertical load, and capacity allocated in ways not compatible with the 2009 Congestion Management GL. ENTSO-E publishes both the perimeter fee and the ITC Transit Losses Data Report (see next point) on its website. In addition, ENTSO-E, on behalf of the ITC Parties, provides information to ACER upon request, which ACER uses for its ITC monitoring report.

Transit Losses Data Report 2010/838 and Perimeter Fee

ENTSO-E will publish its annual report on transmission losses incurred on the transmission system during the relevant period, along with the methodology used to calculate those losses, according to Articles 4.2 and 4.3 of the Annex of Regulation (EU) No 838/2010, Part A. In line with this requirement, the ITC Transit Losses Data Report describes the With and Without Transit methodology used to calculate transit losses. This annual report also presents the results of these calculations, showing the amount of transit losses actually incurred on the transmission system during the preceding calendar year.

Future Improvements and Changes to the ITC Mechanism

While the ITC mechanism has played an important role in compensating costs associated with transits and supporting progress towards an integrated internal electricity market, a review of the mechanism and the underlying Regulation (838/2010) is necessary.

Following ACER's April 2023 recommendation on ITC, ENTSO-E and TSOs will continue to discuss improvements to the ITC mechanism, especially in terms of pricing network losses.

Transparency Platform

Pursuant to Article 3 of Regulation (EU) 543/2013 on the submission and publication of data in electricity markets (Transparency Regulation), ENTSO-E operates the central information transparency platform on which electricity market data submitted under the Regulation are published, namely the ENTSO-E Transparency Platform (TP). In line with the requirements of Article 5 of the Transparency Regulation and in order to facilitate harmonised data submissions to the platform, ENTSO-E developed a Manual of Procedures (MoP) comprising technical guides that elaborate on data definitions and the technical aspects of data exchanges. Market-related fundamental information on generation, consumption, transmission, balancing and other market information is published on the TP.

This information is collected through various sources, such as TSOs, power exchanges, and other third parties, including SIDC, the SAP, and European balancing platforms. The data are collected either for public disclosure via the Transparency Platform or for reporting to ACER in accordance with the relevant regulatory frameworks (e. g., CACM, EB GL, FCA and SO GL data reporting requirements).In addition to its role under the Transparency Regulation, the TP also supports compliance with the revised REMIT Regulation (REMIT II) by acting as an Inside Information Platform (IIP). In this capacity, the TP facilitates the publication of inside information, thereby contributing to transparency and market integrity across European electricity markets.

MoP Updates and Related TP Implementations

Following the implementation of Manual of Procedures (MoP) version 3.5 during 2025 and 2026, ENTSO-E will continue drafting and preparing MoP version 3.6. In the absence of a new legal mandate to date, version 3.6 will focus on refining existing publications and improving data definitions, reporting requirements and data quality. Building on the Data Quality Project and stakeholder cooperation, the revised MoP will incorporate updated Detailed Data Descriptions, clarified reporting requirements and new reporting templates.

It is also expected to introduce Virtual Bidding Zones, subject to consultation and approval. Throughout 2027, ENTSO-E will work with the relevant teams to translate CACM 2.0 and its associated methodologies into new Transparency Platform publication requirements and incorporate them into the MoP in a timely and compliant manner.

Continuing Improvements of TP Architecture

Following the successful deployment of the new graphical user interface and upgraded back-end architecture in 2025, continuous improvements will be implemented throughout 2026 and 2027 to address emerging requirements and the long-term operational needs of the platform. The primary focus for this period will be to enhance the platform's robustness, security, and flexibility while ensuring its readiness for future market and technology developments.

In 2027, ENTSO-E will adapt the Transparency Platform architecture to meet REMIT II requirements, enable multi-vendor development and implement additional security enhancements aligned with sector-wide cybersecurity standards. In parallel, ENTSO-E teams will progressively assume platform ownership and select a new external supplier for long-term maintenance. The transition will conclude with defined service ownership, support arrangements, supplier responsibilities and operational stability criteria for the future platform.

TP Vision 2030

In line with the mandate under Article 3 of Commission Regulation (EU) No 543/2013 to ensure sufficient development of the central information transparency platform, support increasing publication requirements and serve a growing user base, the ENTSO-E Market Committee launched the strategic roadmap "Transparency Platform Vision 2030" in 2023. Within this framework, the first phase, TP Vision Cycle 1 (2024–2026), outlines several initiatives aimed at enabling the Transparency Platform to become Europe's most trusted energy knowledge platform, notably by improving data quality and enhancing user engagement.

Data-quality issues will continue to be addressed through several workstreams in 2027. This will include improving monitoring measures, deploying new KPIs and dashboards, and strengthening cooperation between data providers and ENTSO-E. These efforts are expected to yield results in 2027, particularly through implementation of the revised Memorandum of Understanding between ENTSO-E and TSOs and delivery of the Balancing Data Quality project alongside the balancing platforms and ACER. Data quality will remain central to providing reliable public information throughout 2027 and beyond.

Regarding user engagement, a communication strategy based on TP Vision 2030 and stakeholder feedback will be implemented to achieve closer cooperation and information exchange. One key development planned is the relaunch of the TP Knowledge Base, which aims to consolidate information in one place and make TP data easier to access and use. Further developments are foreseen in 2027, including a possible public roadmap indicating upcoming changes and their timelines, an assessment of the use of artificial intelligence for data interpretation and user support, and preparation of additional guidance materials, among other measures. Newsletters launched in 2026 will continue to provide users with up-to-date information, and the ENTSO-E Transparency User Group (ETUG) and Co-creation User Group (CCUG) will continue to organise regular exchanges.

Transparency Platform: ICT Aspects

Across these activities, ICT will apply a common service-management approach covering ownership, release and change control, supplier governance, security and compliance assurance, testing, operational acceptance, and transition into ongoing support.

CIO-LIO tool

The CIO-LIO tool is the central repository for Energy Identification Codes (EICs), which are used by the Transparency Platform and by TSOs in numerous local projects. In 2027, ICT will translate the recommendations of the 2025 study into prioritised changes and incorporate them into the multi-vendor governance framework established by the implementation project.

Maximum Entry Capacity (MEC)

MEC calculates the maximum allowed foreign capacity for a given capacity-market border, in line with Regulation (EU) 2019/943 on the internal electricity market. In 2027, ICT will continue to orchestrate release and change processes; assure security, compliance and quality; undertake budget planning and financial reporting; manage commercial and contractual frameworks for development, maintenance and hosting; and launch public procurement for hosting and maintenance.

REMIT Implementation

ENTSO-E will continue to facilitate implementation of REMIT II, including through participation in stakeholder and public consultations. Following the release of REMIT II Delegated and Implementing Acts in 2026, ENTSO-E will assess new requirements, such as platform availability, and develop the platform accordingly. Any impacts on ENTSO-E's provision of fundamental data to ACER for reporting under the REMIT II Implementing Act to be released in 2026 will also be implemented in 2027.

ENTSO-E plans to continue and expand its services to TSOs that would like to use TP as their Inside Information Platform (IIP). In parallel, based on the evaluation in 2026, ENTSO-E will potentially expand its offering of Registered Reporting Mechanism (RRM) services to other market participants.

ICT will continue to support REMIT implementation, including preparatory requirements, change requests and continuous improvements.

6 Leveraging Innovation for Grid Development

Research, Development and Innovation (RDI) Reporting Cycle

In accordance with Article 30(1)(i) of Regulation (EU) 2019/943, ENTSO-E steers its research, development, and innovation (RDI) activities through structured research plans and the deployment of efficient research programmes. These activities are designed to accelerate the adoption of innovative and sustainable technologies, enhance the resilience, efficiency, and environmental performance of the European transmission system, and ensure a coordinated evolution of the European electricity network.

To achieve this objective, ENTSO-E has developed a Research, Development and Innovation (RDI) reporting cycle. It begins with the RDI Roadmap, which maps a decade-long pathway for TSO activities in response to EU climate and energy objectives. The Implementation Plan then translates the Roadmap's innovation pathways into concrete actions. The cycle concludes with the Monitoring Report, which tracks TSO innovation projects, maps them against the Roadmap and identifies gaps. Information from one RDI reporting cycle feeds into the next, enabling necessary adjustments.

The most recent RDI Roadmap was released in 2024. The subsequent Implementation Plan was developed in 2025 and released in 2026. The final step, the Monitoring Report, is being developed in 2026 for release in mid-2027. A new RDI reporting cycle will commence in 2027, laying the groundwork for the next RDI Roadmap.

Drafting of the Monitoring Report will be supported by the development and delivery of the Innovation Database, a new internal ENTSO-E tool for tracking innovative projects and mapping them against the trajectory of the Research, Development and Innovation Roadmap.

In 2027, ENTSO-E will continue facilitating proposals for Horizon Europe calls and promoting TSO **participation in European RDI projects**. In doing so, ENTSO-E encourages collaboration on RDI topics and facilitates knowledge sharing among member TSOs (task "EU funding calls coordination (Horizon Europe and others)").

In addition, ENTSO-E will continue to maintain strong cooperation with policymakers, regulators, and stakeholders across the European research and innovation space. ENTSO-E participates in the EU-endorsed European Technology & Innovation Platform on Smart Networks for Energy Transition (ETIP SNET).

Figure 1: ENTSO-E Research, Development and Innovation (RDI) reporting cycle and 2027 activities

Implementing Acts on Data Interoperability and Access

In 2027, ENTSO-E and the EU DSO Entity will continue their cooperation on data transparency within the Joint Working Group (JWG) on data interoperability, established in 2023 in line with the IR MCD. The JWG will support and advise the EC in monitoring and further developing the implementing acts on data interoperability under Article 24(2) of Directive (EU) 2019/944. Moreover, the JWG will continue to cooperate with all relevant stakeholders, including NRAs, consumer associations, electricity retailers, European standardisation organisations, service and technology providers, and equipment and component manufacturers.

In addition, in 2027, ENTSO-E and the EU DSO Entity will continue to update the JWG Repository, a common IT platform mandated by Article 12(1)(c) of the IR MCD and established in July 2025. The JWG Repository publishes guidance for Member States on mapping national data-interoperability practices, the mappings collected from Member States and their version history, as well as other information relevant to facilitating European energy-service interoperability, including the implementing acts on data interoperability adopted by the European Commission and data-interoperability models. In parallel, following the expected EC adoption in 2027 of the Implementing Act on interoperability requirements and non-discriminatory and transparent procedures for access to data required for demand response (IR DR), the JWG will develop and publish the Guidance Document for Member States on the IR DR and the Technical Guide supporting its implementation, while ensuring alignment with relevant implementation standards.

In 2027, the main tasks of the JWG in relation to the Implementing Acts on Data Interoperability and Access will include:

1. Developing guidance to assist Member States in reporting national practices.
2. Collecting reports on national practices provided by Member States regarding the implementation of the reference model.
3. Publishing reports on national practices in the JWG **Repository**, which shall be kept up to date and jointly managed by ENTSO-E and EU DSO Entity.
4. Assisting the EC in monitoring implementation of the reference model included in the relevant implementing acts on data interoperability and access, and its further development in response to regulatory, market or technological changes.
5. Supporting the EC, upon its request, in developing future implementing acts.

Annexes

Annex 1: List of Abbreviations

Abbreviation	Explanation
ACER	Agency for the Cooperation of Energy Regulators
aFRR	Automatic Frequency Restoration Reserves
AHC	Advanced Hybrid Coupling
AI	Artificial Intelligence
AWP	Annual Work Programme
BDM	Boundary Data Management
CEF-E	Connecting Europe Facility – Energy
CfD	Contract for Difference
CACM Regulation	Regulation (EU) 2015/1222 establishing a guideline on capacity allocation and congestion management
CID methodology	Congestion Income Distribution methodology
CBA	Cost–Benefit Analysis
CCC	Coordinated Capacity Calculation
CCR	Capacity Calculation Region
CCUG	Co-creation User Group
CGM	Common Grid Model
CGMA	Common Grid Model Alignment
CGMES	Common Grid Model Exchange Standard
CHP	Common Harmonisation Proposal
CID	Congestion Income Distribution
CIO-LIO	CIO - Central Issuing Office, LIO – Local Issuing office
CIM	Common Information Model
CN	Communication Network
CN CT	Communication Network Core Team
CNC	Connection Network Code
CSA	Coordinated Security Analysis
CSAM	Coordinated Security Analysis Methodology
CSIEM	Central Security Information and Event Management
DA	Day Ahead
DRESG	Demand Response European Stakeholder Group

Abbreviation	Explanation
DSF	Demand Side Flexibility
DSO	Distribution System Operator
EDS	Emergency Data Service
EAS	ENTSO-E Awareness System
EB GL	Regulation (EU) 2017/2195 establishing a guideline on electricity balancing
EC	European Commission
ECCo SP	ENTSO-E's Communication and Connectivity Service Platform
EG CROS	Expert Group on Connection Requirements for Offshore Systems
EIC	Energy Identification Codes
EMD	Electricity Market Design
ENTSO-E	European Network of Transmission System Operators for Electricity
ENNOH	European Network of Network Operators for Hydrogen
ENTSOG	European Network of Transmission System Operators for Gas
ERAA	European Resource Adequacy Assessment
ESA	European Space Agency
ESC	European Stakeholder Committee
ETIP SNET	European Technology & Innovation Platform on Smart Networks for Energy Transition
ETUG	ENTSO-E Transparency User Group
EU	European Union
EUSPA	European Union Agency for the Space Programme
EUSPC	EU Space Programme capabilities
EVS	Emergency Voice Service
FCA Regulation	Regulation (EU) 2016/1719 establishing a guideline on forward capacity allocation
FB	Flow-Based
FCR	Frequency Containment Reserve
GC ESC	Grid Connection European Stakeholder Committee
GL	Guideline

Abbreviation	Explanation
GOVSATCOM	European Union Governmental Satellite Communications
HAR	Harmonised Allocation Rules
HVDC	High Voltage Direct Current
ICS	Incident Classification Scale
ICT	Information and Communication Technologies
ID	Intraday
IF	Implementation Frameworks
IGD	Implementation Guidance Document
IGM	Individual Grid Model
IIP	Inside Information Platform
IN	Imbalance Netting
IR MCD	Commission Implementing Regulation (EU) 2023/1162 on interoperability requirements and non-discriminatory and transparent procedures for access to metering and consumption data
IR DR	Implementing Regulation on interoperability requirements and non-discriminatory and transparent procedures for access to data required for demand response
IR CS	Commission Implementing Regulation (EU) 2026/855 on interoperability requirements and non-discriminatory and transparent procedures for access to data required for customer switching
IRIS	Infrastructure for Resilience, Inter-connectivity and Security by Satellite
ISHM	Imbalance Settlement Harmonisation Methodology
ITC	Inter Transmission System Operator Compensation
JAO	Joint Allocation Platform
JWG	Joint Working Group
KPIs	Key Performance Indicators
LER	Limited Energy Reservoirs
LFC	Load Frequency Control
LTFBA	Long-term flow-based allocation
MEC	Maximum Entry Capacity
MoP	Manual of Procedures

Abbreviation	Explanation
MCSC	Market Coupling Steering Committee
mFRR	manual Frequency Restoration Reserves
MoU	Memorandum of Understanding
NC	Network Code
NC DR	Network Code on Demand Response
NC ER	Regulation (EU) 2017/2196 establishing a network code on electricity emergency and restoration
NCCS	Network Code on Cybersecurity
NEMO	Nominated Electricity Market Operators
NRA	National Regulatory Authority
OBZs	Offshore Bidding Zones
OOB	Out of Band Management
OPC	Outage Planning Coordination
OPDE	Operational Planning Data Environment
OPDM	Operational Planning Data Management
PCI	Project of Common Interest
PCN	Physical Communication Network
PECD	Pan-European Climate Database
PEMMDB	Pan-European Market Modelling Database
PMI	Project of Mutual Interest
PMU	Phasor Measurement Unit
PPA	Power Purchase Agreement
PRA	Probabilistic Risk Assessment
PTDF	Power Transfer Distribution Factor
RCP DES	Regional Coordination Processes Data Exchange Specification
RCC	Regional Coordination Centre
RDI	Research, Development, and Innovation
RfG	Regulation (EU) 2016/631 establishing a network code on requirements for grid connection of generators

Abbreviation	Explanation
REMIT II	Regulation (EU) No 1227/2011 on wholesale energy market integrity and transparency, as revised by Regulation (EU) 2024/1106
RES	Renewable Energy Sources
RG CE	Regional Group Continental Europe
R&I	Research and Innovation
RPR	Regulation (EU) 2019/941 on risk-preparedness in the electricity sector
ROSC	Regional Operational Security Coordination
RPP	Risk Preparedness Plan
RRM	Registered Reporting Mechanism
SAs	Synchronous Areas
SAFA	Synchronous Area Framework Agreement
SAP	Single Allocation Platform
SCADA	Supervisory Control and Data Acquisition
SDAC	Single Day-Ahead Coupling
SFTP	Secure File Transfer Protocol
SIDC	Single Intraday Coupling
SO ESC	System Operations European Stakeholder Committee
SO CG	System Operations Coordination Group

Abbreviation	Explanation
SO GL	Regulation (EU) 2017/1485 establishing a guideline on electricity transmission system operation
SOC	System Operations Committee
SOR	System Operation Region
SSDLC	Secure Software Development Life Cycle
STA	Short-Term Adequacy Analysis
T&C	Terms and Conditions
TEN-E Regulation	Regulation (EU) 2022/869 on guidelines for trans-European energy infrastructure
TCA	Trade and Cooperation Agreement
TP	Transparency Platform
Transparency Regulation	Regulation (EU) No 543/2013 on the submission and publication of data in electricity markets
TSOs	Transmission System Operators
TTO	Transmission Tariff Overview
UTT	Unit Transmission Tariff
TYNDP	Ten-Year Network Development Plan
VAS	Vendor Agnostic Solutions
VP/S	Voice over Packet/Service
WAMS	Wide Area Monitoring System

Annex 2:
List of Tasks for 2027

Annual Work Programme 2027 – List of tasks							2027											
No.	Topic	Regulation	Article	Task	ENTSO-E Body	Mandate Category	J	F	M	A	M	J	J	A	S	O	N	D
1	Annual Work Programme	Reg. 2019/943	Art. 30 (1j)	Adopt an Annual Work Programme	Board	ENTSO-E, EU												
2	Annual Work Programme	N/A	N/A	Review of Priorities and alignment with AWP	Board	ENTSO-E, EU												
1. INITIATIVES TO ENSURE SYSTEM SECURITY																		
3	Communication Networks	Reg. 2017/2196	Art. 41	Implementation of Communication Systems for the restoration plans/needs during an emergency state (EVS, EDS)	ICTC	ENTSO-E, EU												
4	Communication Networks	N/A	N/A	Communication Networks – Ongoing Maintenance and Operations – PCN Private Communication Lines operation	ICTC	TSO												
5	Communication Networks	N/A	N/A	Communication Networks – Ongoing Maintenance and Operations – PCN Leased Lines operation	ICTC	TSO												
6	Communication Networks	N/A	N/A	Communication Networks – Communication Networks Management	ICTC	TSO												
7	Cybersecurity	NCCS	Art. 19 (1)	Implementation of Network Code on Cyber Security (NCCS)	ICTC	ENTSO-E, EU												
8	EAS	Reg. 2017/1485, Reg. 2017/2196	N/A	Preparation of business requirements for further development of EAS functionalities	SOC	TSO												
9	EGL BG	N/A	N/A	Task Force Security of Critical Infrastructures	SOC	ENTSO-E, EU												
10	E&R	Reg. 2017/2196	N/A	Network Code Emergency & Restoration (NC E&R) – Monitoring and clarifying NC E&R regulation	SOC	ENTSO-E, EU												
11	IT Security	N/A	N/A	IT Security – Secure Software Development Life Cycle (SSDLC)	ICTC	TSO												
12	RCC	Reg. 2019/943	Art. 37 (1h)	Methodology for RCC task supporting regional restoration	SOC	ENTSO-E, EU												
13	RCC	Reg. 2019/943	Art. 37 (1b), Art. 42 & Annex I (2)	Implementation of the RCC tasks – Coordinated security analysis	SOC	TSO												
14	RCC	Reg. 2019/943	Art. 37 (1f)	Implementation of the RCC tasks – Outage Planning Coordination	SOC	TSO												
15	RCC	Reg. 2019/943	Art. 37 (1j)	Implementation of the RCC tasks – Sizing & Procurement	SOC	ENTSO-E, EU												
16	RDI	N/A	N/A	HVDC Grid Stability	RDIC	TSO												
17	RDI	N/A	N/A	Stability Management Ten Year Roadmap	RDIC	TSO												
18	RDI	N/A	N/A	Enhanced Stability Monitoring in Future Control Rooms	RDIC	TSO												
19	RGCE Operations	Reg. 2017/1485	Art. 13 & Art. 118	PG KOSTT: Definition, implementation and maintenance of Connection Agreement with KOSTT	SOC	TSO												
20	RGCE Operations	Reg. 2017/1485	Art. 153	RG CE: Implementation Art.153 SO GL – FCR (frequency containment reserve) probablistic dimensioning	SOC	TSO												
21	RGCE Operations	Reg. 2017/1485	Art. 156	RG CE: Implementation Art.156 SO GL – TminLER for FCR (frequency containment reserves) by LER (low energy reservoirs)	SOC	TSO												
22	RGCE Operations	Reg. 2017/1485	Art. 13 & Art. 118	PG UAMD : Definition, implementation and maintenance of Agreements for Synchronous Operation between Continental Europe TSOs and Moldelectrica	SOC	TSO												
23	RPP	Reg. 2019/941	Art. 63 (3), (4)	Risk Preparedness Methodology Review and Regional Crisis Scenarios Update	SOC	ENTSO-E, EU												
24	Security of Critical Infrastructure	EU Grid Action Plan	Annex II point (5) [Infrastructure Categories] and Annex IV	Security of Critical Infrastructure (Project Security by Design)	SDC	ENTSO-E, EU												

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25	Security of Markets	N/A	N/A	Security Dimension of Markets	MC	ENTSO-E, EU												
26	SOGL	Reg. 2017/1485	Art. 15	Incident classification scale methodology and annual report	SOC	ENTSO-E, EU												W
27	SOGL	Reg. 2017/1485	Art. 16	Annual report on load-frequency control	SOC	ENTSO-E, EU												
28	SOGL	Reg. 2017/1485	Art. 17	Annual report on regional coordination assessment	SOC	ENTSO-E, EU												
29	SOGL	Reg. 2017/1485	Art.75	CSAm clarification and amendment proposal	SOC	TSO												
30	SOGL	Reg. 2017/1485	Art. 65	Y-1 CGM scenario definition, testing & reporting	SOC	TSO												
31	SOGL/EB	N/A	N/A	Projects supporting operational reliability and security of the pan-European grid	SOC	ENTSO-E, EU												
32	SOGL Regional	Reg. 2017/1485	38	RG CE: Dynamic stability monitoring and assessment in the Continental Europe Synchronous Area	SOC	TSO												
33	SOGL Regional	Reg. 2017/1485	Art. 118	SG SAFA : Implementation and maintenance of SAFA by CE TSOs	SOC	ENTSO-E, EU												
34	SOGL Regional	Reg. 2017/1485	Art. 127	Monitoring and defining proposals for preserving and improving the frequency quality in the CE synchronous area	SOC	TSO												
2. GRID DEVELOPMENT AND GRID CONNECTION																		
35	CACM	Reg. 2015/1222	Art. 73	Assessment of the CID methodology	MC	TSO												
36	CACM	N/A	N/A	CACM Congestion Income Distribution – cross CCR implementation	MC	TSO												
37	Data Interoperability & Standardisation	Reg. 2022/869	N/A	Data (grid, demand, PEMMDB), incl. data collections and data processing	SDC	ENTSO-E, EU												
38	Data Interoperability & Standardisation	Reg. 2022/869	N/A	Climate data base for Energy modelling studies – PECD	SDC	ENTSO-E, EU												
39	Data Interoperability & Standardisation	Reg. 2022/869	N/A	Data standarization for Energy modelling studies – COMODAS	SDC	ENTSO-E, EU												
40	Data Interoperability & Standardisation	Reg. 2022/869	N/A	Open-Source Modelling	SDC	ENTSO-E, EU												
41	Data Interoperability & Standardisation	Reg. 2022/869	N/A	Preparation of Flow-Based domains	SDC	ENTSO-E, EU												
42	Economic Regulation	EU Grid Action Plan	Action 9,10	Financing mechanisms to support the upcoming grid investments and the energy transition	Board	ENTSO-E, EU												
43	Economic Regulation	EU Grid Action Plan	Action 8	Sound and fair regulatory treatment of TSO costs that promote cost efficiency, performance, and innovation	MC	TSO												
44	Economic Regulation	Reg. 2019/943	Art. 19(4)	Amendment of use of Congestion Income Methodology	MC	TSO												
45	Offshore	NC & GLs, TEN-E	N/A	Offshore strategy and coordination	Board	ENTSO-E, EU												
46	RDI	EU Grid Action Plan	Action 7	Technopedia	RDIC	ENTSO-E, EU												
47	RDI	N/A	N/A	Develop a strategic assessment and a TSO framework of Building Information Modelling (BIM) covering how BIM can streamline infrastructure delivery, including permitting acceleration and standardise data exchange across the continent.	RDIC	TSO												

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48	RDI	N/A	N/A	Integrated grid-forming capability coordination for enhanced stability	RDIC	TSO												
49	RDI	EU Grid Action Plan	Action 6	Capacitypedia (pan-EU platform for the publication of hosting capacity information)	RDIC	ENTSO-E, EU		W										
50	RDI	N/A	N/A	Analysis and action proposal to support data centres secure and sustainable integration & flexibility potential	RDIC	TSO												
51	RDI	N/A	N/A	Impact of heating & cooling electrification on scenarios: Heat Pumps penetration, modelling and hourly load profiles	RDIC	TSO												
52	RfG, DC, HVDC	Reg. 2016/631, Reg. 2016/1388, Reg. 2016/1447	Art. 59(4) RfG, Art. 57(4) DC, Art. 76(4) HVDC NC	Connection Network Codes amendments	SDC	ENTSO-E, EU												
53	RfG, DC, HVDC	Reg. 2016/631, Reg. 2016/1388, Reg. 2016/1447	Art. 58 RfG, Art. 56 DC, Art. 75 HVDC NC	Connection Network Codes implementation guidance	SDC	ENTSO-E, EU												
54	RfG, DC, HVDC	Reg. 2016/631, Reg. 2016/1388, Reg. 2016/1447	Art. 11 RfG, Art. 10 DC, Art. 9 HVDC NC	Connection Network Codes European Stakeholder Committee	SDC	ENTSO-E, EU												
55	RfG, DC, HVDC	Reg. 2016/631, Reg. 2016/1388, Reg. 2016/1447	Art. 59 RfG, Art. 57 DC, Art. 76 HVDC NC	Connection Network Codes implementation monitoring	SDC	ENTSO-E, EU												
56	TEN-E	TEN-E, Electricity Regulation, others	N/A	Asset Management	SDC	ENTSO-E, EU												
57	TEN-E	TEN-E, Electricity Regulation, others	N/A	Supply chains and public procurement	SDC	ENTSO-E, EU												
58	TYNDP	Reg. 2022/869	Art. 11	TYNDP Cost benefit Analysis (CBA) Methodology development	SDC	ENTSO-E, EU												
59	TYNDP	Reg. 2022/869 Electricity Regulation, others	N/A	TYNDP long term system stability	SDC	ENTSO-E, EU												
60	TYNDP	Reg. 2022/869	Art. 14, 15	TYNDP Offshore Network Development plans (ONDPs)	SDC	ENTSO-E, EU												
61	TYNDP	Electricity Regulation	Art. 48	TYNDP Cost benefit Analysis (CBA) delivery	SDC	ENTSO-E, EU												
62	TYNDP	Reg. 2022/869	Art. 13	TYNDP System Needs	SDC	ENTSO-E, EU												
63	TYNDP	Reg. 2022/869	Art. 12	TYNDP Scenarios (EU targets and engagement, incl. Stakeholder Reference Group)	SDC	ENTSO-E, EU												
64	TYNDP	TEN-E	Article 15	Sea-Basin Cost benefit cost sharing application (CBCS)	SDC	ENTSO-E, EU												
65	TYNDP	Reg. 2022/869	Art. 12	TYNDP Energy mix demand modelling	SDC	ENTSO-E, EU												
66	TYNDP	Reg. 2022/869	Art. 12	TYNDP Energy Mix supply modelling	SDC	ENTSO-E, EU												

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3. ADEQUACY AND FLEXIBILITY																		
67	Adequacy	Reg. 2019/943	Art. 23	ERAA methodology development and testing	SDC	ENTSO-E, EU												
68	Adequacy	Reg. 2019/943	Art. 23	ERAA Project Management and Publications	SDC	ENTSO-E, EU												
69	Adequacy	Reg. 2019/941	Art. 9	Seasonal Outlook	SDC	ENTSO-E, EU												
70	Adequacy	Reg. 2019/943	Art. 23	ERAA Data Processing and analysis	SDC	ENTSO-E, EU												
71	Adequacy	Reg. 2019/943	Art. 23	ERAA Flow-Based domains methodology	SDC	ENTSO-E, EU												
72	Data Interoperability & Standardisation	IR MCD, IR CS	Art. 11, 12 & Art. 10 & 11, respectively	Implementing acts on data interoperability: Draft and monitor	ICTC	ENTSO-E, EU												
73	Data Interoperability & Standardisation	IR MCD, IR CS	Art. 11, 12 & Art. 10 & 11, respectively	Implementing acts on data interoperability: maintain model	ICTC	ENTSO-E, EU												
74	NC DR	Reg. 2019/943	Art. 59 (1e)	Implementation of a network code on demand response	MC	ENTSO-E, EU												
75	OPC/STA	N/A	N/A	Outage Planning Coordination & Short Term Adequacy – Application Support	ICTC	TSO												
76	RCC	Reg. 2019/943	Art. 37 (1e)	Implementation of the RCC tasks – Short term adequacy	SOC	TSO												
77	RDI	N/A	N/A	Support to TSOs on implementation of the Flexibility Needs Assessment Methodology by answering methodology-related questions, collecting and addressing their needs and triggering a methodology amendment process, if required by the TSOs.	RDIC	TSO												
78	RDI	N/A	N/A	Flexibility for transmission-level services: identification of synergies and conflicts for a system-friendly deployment	RDIC	TSO												
79	RDI	N/A	N/A	Analysis on the role and impact of long-duration energy storage in future European power systems	RDIC	TSO												
4. OPERATION OF THE FUTURE POWER SYSTEM																		
80	EAS	Reg. 2017/1485	Art. 42 & Art. 152	EAS WAMS Phase 2 TSOs Mandates	ICTC	TSO												
81	EMDR	N/A	N/A	Electricity Market Design: market mechanisms for adequacy and flexibility	MC	TSO												
82	EMDR	N/A	N/A	Electricity Market Design: competitive & affordable decarbonisation	MC	N/A (Not Available)												
83	E&R	Reg. 2017/2196	N/A	Network Code Emergency & Restoration (NC E&R) – Development of amendments	SOC	ENTSO-E, EU												
84	Offshore	N/A	N/A	Balancing of Offshore Bidding Zones (OBZs)	MC	ENTSO-E, EU												
85	Offshore	Reg. 2016/631, Reg. 2016/1447, Reg. 2017/1485	N/A	Offshore dynamic stability	SOC	TSO												
86	Offshore	Reg. 2016/631, Reg. 2016/1447, Reg. 2017/1485	N/A	Offshore Frequency Control	SOC	TSO												
87	Offshore	Reg. 2017/1485, Reg. 2015/1222, Reg. 2017/2195	N/A	Offshore Geographical Areas	SOC	TSO												

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88	Offshore	Reg. 2017/2196	N/A	Offshore Ramping	SOC	TSO												
89	Offshore	TEN-E, Electricity Regulation, other	N/A	Supervision and steering of offshore mandates and tasks	SOC	ENTSO-E, EU												
90	RCC	Reg. 2019/943	Art. 46 (3)	Review and alignment of RCC annual reports	SOC	ENTSO-E, EU												
91	RCC	Reg. 2019/943	Art. 30 (2)	Reporting to ACER on RCC Implementation and Performance Shortcomings	SOC	ENTSO-E, EU												
92	RCC	Reg. 2016/1719, Reg. 2015/1222 and Reg. 2017/1485	Article 18, Article 17 as well as Article 67 and 70 respectively.	Common Grid Model Methodology (amendments)	SOC	ENTSO-E, EU												
93	RDI	N/A	N/A	Frameworks for coordinating mature HVDC grids	RDIC	TSO						W						
94	RDI	N/A	N/A	Integrating EU Space Programme capabilities (EUSPC) into TSOs' resilience	RDIC	TSO												
95	RDI	N/A	N/A	AI decision support systems for TSO control room operations	RDIC	TSO					W							
96	RDI	N/A	N/A	Digital Twin and AI integration guideline for predictive and adaptive power system operations (Intertwining of Digital Twins and AI)	RDIC	TSO					W							
97	RDI	N/A	N/A	Enhancing real-time grid observability through digital twins: use cases, best practices and integration pathways	RDIC	TSO												
98	RDI	N/A	N/A	AI in TSO Operations: Implementation blueprint	RDIC	TSO												
99	RDI	N/A	N/A	Advancing TSO Dynamic Security Assessment: WAMS integration and best practices	RDIC	TSO												W
100	RDI	N/A	N/A	AI.grids Foundational Models for AI in energy	RDIC	TSO												
101	RDI	N/A	N/A	Assessment of Future-Proof Time Synchronization Solutions for TSOs	RDIC	TSO												
102	RDI	N/A	N/A	Advancing next-gen control centers through vendor agnostic architectures, capability mapping and orchestration frameworks	RDIC	TSO												W
103	SOGL	Reg. 2017/1485	Art. 115	Implementation of the RCC tasks – Common Grid Model	SOC	TSO												
104	SOGL	Reg. 2017/1485	Art. 114, 115	Operational planning data environment (OPDE) Enablement for the CGM Business Process	SOC	ENTSO-E, EU												
105	SOGL	Reg. 2017/1485	N/A	Development of SOGL Amendments	SOC	ENTSO-E, EU												
106	SOGL	Reg. 2017/1485	Art. 10	System Operations European Stakeholder Committee – Stakeholder involvement	SOC	ENTSO-E, EU												
5. OPERATIONS REPORTING																		
107	SOGL	Reg. 2017/1485	Art. 14 (2)	SOGL List of information to ACER (Monitoring SOGL)	SOC	ENTSO-E, EU												
108	SOGL/CSAM	Reg. 2017/1485	Art. 75 (1) & Art. 44 (1)	Report on status on probabilistic risk assessment approaches and maturity & develop a common PRA methodology	SOC	TSO												
109	SOGL Regional	Reg. 2017/1485	110	Development and operation of the Verification platform for the Continental Europe TSOs	ICTC	TSO												

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6. MARKET INTEGRATION AND MARKET TRANSPARENCY																		
110	Annual Work Programme	943/2019	N/A	Network Codes Coordination function- Cross-Committee matters	Secretariat	ENTSO-E, EU												
111	CACM	Reg. 2015/1222	Art. 31(3), in conjuction with Art. 20-21 and 25	CACM – measures to increase transmission capacities	MC	TSO												
112	CACM	Reg. 2015/1222	Art. 14(2), (3), (5), (7)	CACM – definition of structural congestions	MC	TSO												
113	CACM	Reg. 2017/1485	Art. 37(6)	NEMOs review of the algorithm methodology in cooperation with TSOs	MC	TSO												
114	CACM	Reg. 2015/1222	N/A	CACM Regulation Amendments implementation	MC	TSO												
115	CACM	Reg. 2015/1222	N/A	Transmission Access Guarantee	MC	TSO												
116	CACM	Reg. 2015/1222	34(4)	Technical report on bidding zone configuration	MC	ENTSO-E, EU												
117	Capacity Mechanisms	Reg. 2019/943	30(1)(c) in conjunction with Art. 26(11) and (15	Annual Report on Cross-Border Participation to Capacity Mechanisms	MC	ENTSO-E, EU												
118	Cooperation with 3rd Countries	EU-UK Trade and Cooperation Agreement (TCA)	N/A	Cooperation with UK TSOs including to establish technical procedures (market)	MC	ENTSO-E, EU												
119	EB	Reg. 2017/2195	Art. 12 of mFRR IF and aFRR IF	aFRR and mFRR Implementation Frameworks amendments and T&C harmonisation	MC	TSO												
120	EB	Reg. 2017/2195	Arts. 20 (6), 21(6), 22(6)	Coordination of mFRR, aFRR and IN Platforms Implementation	MC	TSO												
121	EB	Reg. 2017/2195 and Algorithm Methodology	Art. 40(1) Regulation 2017/2195 in conjunction with Art. 4(15)-(16) of the Algorith Methodology	Co-optimisation (R&D)	MC	TSO												
122	EB	Reg. 2017/2195	Arts. 6 and 52(2)	Imbalance Settlement Harmonisation Methodology Amendment	MC	TSO												
123	EB	Reg. 2017/2195	N/A	EB Regulation Amendments Development	MC	ENTSO-E, EU												
124	EB	Reg. 2017/2195	Arts. 6 and 25(1)-(2)	Standard Balancing Capacity Products Methodology and Implementation Framework for mFRR and aFRR (IF) Amendment	MC	TSO												
125	EB	Reg. 2017/2195 and aFRR IF/mFRR IF and IN IF	Art. 13 (7) aFRR IF and mFRR IF and Art. 18(2) IN IF	Efficiency and effectiveness assessment of the European balancing platforms	MC	TSO												
126	EB	ACER Decision on the Implementation framework for mFRR Platform: Annex I	Art. 13 (3) mFRR IF	Evaluation of the impact of scheduled counter-activations for the mFRR platform	MC	TSO												
127	EB	Reg. 2017/2195	Art. 63(3 & 4)	EBGL list of information to ACER (Monitoring EB Regulation)	MC	ENTSO-E, EU												
128	Economic Regulation	Reg. 2010/838	Annex A – Section 7 (3)	Collection of annual data, audit and publication of the perimeter fee- ITC	MC	ENTSO-E, EU												
129	Economic Regulation	Reg. 2019/943	Art. 19(5)	Annual Congestion Revenues Overview Report	MC	TSO												

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130	Economic Regulation	Reg. 2010/838	N/A	Structural improvements to the ITC Mechanism	MC	ENTSO-E, EU												
131	Economic Regulation	Reg. 2019/943	Art. 18	Transmission Tariff Overview Report	MC	TSO												
132	Economic Regulation	Reg. 2010/838	Annex A – Art.?4 (3)	Transit Losses Data Report	MC	ENTSO-E, EU												
133	FCA	Reg. 2016/1719	Art. 51	Biennial review of the Harmonised Allocation Rules (FCA Article 51)	MC	TSO												
134	FCA	Reg. 2016/1719	N/A	FCA regulation amendment preparation and implementation	MC	ENTSO-E, EU												
135	FCA	Reg. 2016/1719	Art. 49, Art. 57	FCA Long-Term Flow-Based Allocation coordination according to the approved methodologies	MC	TSO												
136	Monitoring CACM	Reg. 2015/1222	Art. 80 (2)	Annual CACM cost report	MC	TSO												
137	Monitoring CACM	Reg. 2015/1222	Art. 82(4), (5)	CACM list of information to ACER (Monitoring CACM)	MC	TSO												
138	Monitoring CACM	Reg. 2015/1222	Art. 82(4), (5)	Flow based implementation and regional organisations Monitoring	MC	TSO												
139	Monitoring CACM	Reg. 2015/1222	Art. 82 (2)	Monitoring of Day-Ahead, Intraday, Long-Term Markets and potential implementation problems (Market report)	MC	TSO												
140	Monitoring CACM	Reg. 2019/943	Art.32	PTDFs calculation and provision to ACER	MC	TSO												
141	Monitoring CACM	N/A	N/A	Market prices analysis	MC	N/A (Not Available)												
142	Monitoring EB	Reg. 2017/2195	Art. 63 (1)	Monitoring of EB implementation	MC	ENTSO-E, EU												
143	Monitoring FCA	Reg. 2016/1719	Art. 63 (3), (4)	FCA list of information to ACER (Monitoring FCA)	MC	TSO												
144	Monitoring FCA	Reg. 2016/1719	Art. 63 (1)	Monitor the implementation of forward capacity allocation and the establishment of single allocation platform including the progress and potential problems with the implementation (Monitoring FCA)	MC	ENTSO-E, EU												
145	RCC	Reg. 2019/943	Art. 37 (1a) & Art. 42(2)	Implementation of the RCC tasks – Coordinated Capacity Calculation	SOC	TSO												
146	Transparency Platform	Reg. 1227/2011	Reg. 1227/2011, Reg. 2024/1106	Regulation on Wholesale Energy Market Integrity and Transparency (REMIT)	MC	ENTSO-E, EU												
147	Transparency Platform	Reg. 2013/543	N/A	Data provision to Transparency platform according to regulation 543/2013 and other regulations	MC	TSO												
148	Transparency Platform	Reg. 2013/543	Art. 4 (1)	Implementation of Transparency platform according to regulation 543/2013 and other regulations	MC	ENTSO-E, EU												
149	Transparency Platform	N/A	N/A	Transparency Platform (Maintenance & Operations)/CIO/LIO	ICTC	TSO												
150	Transparency Platform	N/A	N/A	Transparency Platform – new developments – TP Mandated Requirements	ICTC	TSO												
151	Transparency Platform	N/A	N/A	Transparency Platform – new developments – TP Vision 2030 (circle 1)	ICTC	TSO												
7. LEVERAGING INNOVATION FOR GRID DEVELOPMENT																		
152	RDI	Reg. 2019/943	Art. 30(1i)	Research, Development & Innovation (RDI) Roadmap, including the Implementation Plan section	RDIC	ENTSO-E, EU												
153	RDI	N/A	N/A	Innovation Database & Monitoring Report	RDIC	TSO												
154	RDI	N/A	N/A	EU funding calls coordination (Horizon Europe and others)	RDIC	TSO												
155	TSO-DSO	N/A	N/A	Joint Work Plan of EU DSO Entity ENTSO-E: monitoring of 2026 and development of 2027 activities	Board	TSO												

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