



European Union Agency for the Cooperation
of Energy Regulators

Position on improving and simplifying the legal framework on European grids

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1. Background and summary of proposals

The European Commission has announced in its [Action Plan for Affordable Energy](#) of February 2025 that it “*will put forward a European Grid Package consisting of legislative proposals and non-legislative measures to, among others, simplify the TEN-E Regulation, ensure cross-border integrated planning and delivery of projects, especially on interconnectors, streamline permitting, enhance distribution grid planning, boost digitalisation and innovation as well as increase visibility of manufacturing supply needs. It will follow a top-down planning approach, integrating regional and EU interests and develop effective cost sharing mechanism (e.g. for cross-border projects), for an optimised energy system*”.

It is expected that the European Commission will propose revised legislation in Q4 2025. Recently, the [European Commission has launched a consultation](#)¹ to gather stakeholder feedback on the current EU regulatory framework for grids. During this call, the European Commission requested input on the problem analysis, potential solutions, and the impacts of various options².

The revised guidelines for trans-European energy infrastructure (TEN-E Regulation)³, which entered into force in June 2022, marked a significant step in aligning the EU’s energy infrastructure policy with its decarbonisation objectives.

ACER and the National Regulatory Authorities (NRAs) have a long experience in network development for electricity and gas, as well as in cooperating on the implementation of the TEN-E Regulation. They will also play a role in the development of hydrogen infrastructure with the implementation of the [hydrogen and decarbonised gas market package](#). ACER and NRAs actively oversee the development of ten-year network developments plans (TYNDPs), including the design of scenarios and the methodologies for cost-benefit analysis (CBA). Moreover, they are involved in the selection of energy projects of common interest (PCI) and projects of mutual interest (PMI) and decide on cross-border cost allocation (CBCA) proposals.

The upcoming revision of the TEN-E Regulation offers a timely opportunity to improve the efficiency of the EU network planning processes, supporting a cost-effective energy transition. This Paper aims primarily, though not exclusively, to identify current challenges and proposals to tackle them through the upcoming revision of the TEN-E Regulation. It also highlights challenges that, in some cases, could be resolved through better implementation of the current TEN-E Regulation.

ACER’s proposals aim to streamline procedures and accelerate the development of key infrastructure under strengthened transparency, regulatory oversight and governance of network planning across the EU. They include practical measures to simplify the TYNDP deliverables — including scenarios and CBA methodologies — and the selection and monitoring of PCI projects⁴. Furthermore, these proposals acknowledge the value of alternative non-wire solutions or other measures to increase electricity grid capacities.

The context of estimated needs for investments in grids matters. The European Commission has estimated that [investment needs for electricity grids](#) will amount to €730 billion for distribution and €477 billion for transmission by 2040. In the hydrogen sector, several major infrastructure projects are currently in early stages of development. According to the [European Commission’s hydrogen strategy](#) under the EU Green Deal, investment needs for hydrogen networks in Europe could reach up to €65 billion by 2030, assuming hydrogen scales-up as envisaged in the strategy. While the electricity sector already faces significant financing challenges to address these investment volumes, the situation is

¹ The call for evidence on the TEN-E Regulation was open from 13 May 2025 until 5 August 2025.

² The initiative aims to support rapid electrification, accelerated permitting, and optimised network planning, among others. Key aspects include:

- Addressing the gap between grid expansion needs and current development projects.
- Running an impact assessment and an implementation report in parallel to evaluate the effectiveness of the TEN-E Regulation, focusing on planning, permitting, cost-sharing, and simplification.
- Gathering views on whether further EU-level action is needed to improve permitting processes for grids, renewable energy generation, and storage.

³ Regulation (EU) 2022/869.

⁴ For the purposes of this Paper, the term “PCI” is used as a shorthand to cover both PCI and PMI, including references to the respective selection process.

even more complex for hydrogen. Relying solely on regulated tariffs could result in very high fees for early users of hydrogen networks. Therefore, [inter-temporal cost allocation mechanisms](#) and other measures may contribute to the viability of hydrogen infrastructure development.

This Paper focuses on network development aspects and does not address permitting and financing aspects in detail⁵. The proposals for the TEN-E revision are articulated under four main areas: scenarios, identification of infrastructure needs, PCI selection process and, finally, scrutiny of investment requests and cost-sharing mechanisms. Other elements, such as transparency and efficiency are also reflected in the analyses of challenges and the identification of proposals.

The **development of scenarios** is the starting point of any network planning and infrastructure assessment. Scenarios aim to anticipate the trends and dynamics shaping the energy sector over the planning horizon. Robust, coherent and timely scenarios, which consider policy goals and how markets can support their achievement, are essential to underpin sound investment decisions. In recent years, the development of scenarios by ENTSO-E and ENTSG's has faced repeated delays, sometimes extending up to one-third of the total planning timeline, and experienced suboptimal transparency and cross-sectoral coordination. The root causes of these delays are multifaceted, pertaining to the complexity of the tasks, legal requirements, multiple consultation steps, and the need for improved coordination within and between ENTSO-E and ENTSG.

A second key pillar of infrastructure planning is the thorough **assessment of infrastructure needs**. This assessment is critical for evaluating the efficiency and effectiveness of investment proposals and, where possible, the cost-efficiency of solutions across sectors. Targeting the most pressing cross-border infrastructure needs is essential to ensure that all Member States can benefit from an integrated energy market enabling them to import clean and affordable energy from regions where it is most readily available, both under normal market conditions and during a crisis.

A third pillar is the **selection process for Projects of Common Interest**. This process is crucial, as it determines which projects benefit from political support, streamlined permitting, and access to EU funding. A robust and transparent selection process ensures that the most needed and high-impact infrastructure aligned with EU energy and climate objectives is prioritised.

Finally, concerning **infrastructure cost-sharing**, it may be opportune to explore potential improvements to the current CBCA tool and scrutiny of investment request processes, particularly where sharing costs beyond bilateral arrangements is needed for supporting the implementation of PCIs.

The starting point for these proposals has been the review of previous ACER-CEER documents containing ideas on grids planning aspects, namely:

1. ACER-CEER Position on the Revision of TEN-E Regulation and Infrastructure Governance, June 2020 ([1st ACER-CEER Position Paper on TEN-E](#)).
2. ACER-CEER Position on Improving the TEN-E Regulation, March 2021 (hereinafter [2nd ACER-CEER Position Paper on TEN-E](#)).
3. ACER-CEER Paper on Challenges of the Future Electricity System, July 2024 (hereinafter [the ACER-CEER 2024 Electricity Systems Paper](#)).
4. ACER [Monitoring Report on electricity infrastructure development](#), December 2024.

All the proposals for improving the TEN Regulation and its implementation are presented according to the following structure: identification of the issue, proposed solution(s) where these have been identified, and the understanding on whether the topic falls within the current scope of the TEN-E Regulation, extends beyond or could be resolved with better implementation.

1. Scenarios: simplification and better governance
2. TYNDP deliverables: simpler process and more effective oversight
3. Integrated needs and complementary EU layer for unaddressed gaps

⁵ While permitting constitutes a relevant challenge, it largely lies within the competence of spatial planning authorities. Financing aspects are complex and would require separate, in-depth considerations.

4. Promote infrastructure efficiency and alternative solutions
5. Strengthen and simplify the PCI selection process
6. Enhance PCI monitoring
7. Cross-border cost allocation (CBCA)
8. Improve transparency of network planning processes

From ACER's perspective, priority should be given to improving the current processes for developing scenarios, identifying infrastructure needs, and selecting projects of European relevance, by ensuring better implementation of the existing framework along with regulatory improvements and more efficient processes than today. Hence it is important to:

1. **Strengthen the regulatory oversight** performed by ACER **over key methodologies for scenarios and infrastructure planning** at European level.
2. **Improve the identification and prioritisation of unaddressed infrastructure needs.** Proper mechanisms should be established, where possible, within the existing framework, to ensure that remaining critical infrastructure gaps are identified and that the best solutions are proposed to address them. This is particularly important in the context of supply chains' constraints, including delays in the delivery of critical equipment and increasing competition for limited resources.
3. **Streamline and simplify the processes provided in the TEN-E Regulation**, building on the experience gained in network development, the PCI selection process, and PCI monitoring.

The table below summarises the main recommendations of this Paper, grouped into two categories: measures aimed at changing the TEN-E process to address existing challenges, and those focused on its simplification and streamlining.

Topic	Recommendations to strengthen ⁶ the TEN-E process	Recommendations to simplify the TEN-E process
Scenarios: simplification and better governance	Introduce in the TEN-E Regulation the requirement for a scenario methodology, approved by the European Commission or ACER.	Subject to the introduction of the approved methodology, remove current opinions from ACER, MSs, EC and ESABCC ⁷ on draft scenarios.
	Mandate ACER and NRAs to review the inputs submitted by TSOs to the ENTSOs to develop the scenarios.	Align the timeline between TYNDP scenarios and NECPs.
	Amend the Governance Regulation to enhance the clarity and completeness of NECP data and its suitability for use in developing TYNDP scenarios.	
	Include a 'trends & projections scenario', reflecting the progress towards meeting policy targets, or, at least, ensure that criteria for defining the alternative scenarios are set in the approved methodology.	

⁶ Strengthening means a combination of better implementation and legislative changes.

⁷ Member States (MSs), European Scientific Advisory Board on Climate Change (ESABCC), European Commission (EC).

Topic	Recommendations to strengthen ⁶ the TEN-E process	Recommendations to simplify the TEN-E process
TYNDP deliverables: simpler process and more effective oversight	Introduce the requirement for a methodology for infrastructure needs/gaps, in similar terms as the existing CBA methodology.	Subject to the introduction of a methodology, remove the time constraint set in current TEN-E for the preparation of the so called “infrastructure gaps identification report”.
	Mandate ACER to approve the needs/gaps methodology and the CBA methodology, and to request amendments to the draft deliverables.	Subject to the introduction of the approved methodology, remove the requirement for the opinions on the draft infrastructure gaps report and CBA methodology, including the opinion from ACER.
Integrated needs and complementary EU layer for unaddressed gaps	Require an integrated, multi-sectoral needs and gaps assessment to consider systems interlinkages when identifying infrastructure needs and gaps.	Remove the reference to a stand-alone “progressively integrated model”, which would become redundant once Article 13 provides for an integrated multi-sectoral needs and gaps assessment.
	Further support the identification of gaps and of the solutions to address the remaining gaps, through more effective implementation of existing processes and, where necessary, through targeted modifications to their regulatory framework or responsibilities.	
Strengthen and simplify the PCI selection process	Introduce criteria for “mature PCIs” and “non-mature PCIs”, at least for electricity projects, and ensure that the final PCI list clusters the projects accordingly.	Replace the “Priority Corridors” and “Areas” described in Annex I with EU-wide thematic groups.
	Mandate TEN-E groups to systematically relate candidate projects to identified infrastructure needs and seek solutions to address or mitigate the remaining gaps.	Introduce a simpler PCI application/evaluation process for projects already PCIs, which have shown significant progress.
Enhance PCI monitoring	Make ACER PCI monitoring more relevant for the assessment of PCI projects during the PCI selection.	Replace the current annual reporting by promoters with a biennial one.
		Subject to the strengthening of the ACER monitoring mandate, remove ACER Opinion on the draft PCI list, while making ACER PCI monitoring a key input for the PCI/PMI selection.

Topic	Recommendations to strengthen ⁶ the TEN-E process	Recommendations to simplify the TEN-E process
Cross-border cost allocation (CBCA)	Ensure that the identification of potential beneficiary countries is carried out already in the PCI selection process.	Remove the mandatory sequential step between CBCA and grants for works.

On distribution planning

Distribution System Operators (DSOs) are crucial to Europe's energy transition. Electricity DSOs role is evolving from “passive distributors” to “active enablers and facilitators” of a decentralised, digitalised, and decarbonised energy system. Enhancing the transparency in DSO network planning and the coordination between the distribution and transmission levels are therefore essential for the successful integration of new technologies and for the energy transition. This important element was also underlined by the European Commission in its [Action Plan for Grids](#) (2023), which tasked ACER and the Council of European Energy Regulators (CEER) with developing guidance for DSOs to promote consistency in distribution planning and to provide recommendations supporting national development plans across the EU. The resulting [ACER-CEER guidance on Electricity Distribution Planning](#), published in July 2025, will require time for national-level implementation. Therefore, this Paper does not include specific recommendations targeting the distribution level. Nevertheless, ACER stresses the importance of monitoring progress in implementing the ACER-CEER guidance and identifying emerging best practices.

2. Proposals for improving today's legal framework

2.1. Scenarios: simplification and better governance

Issues identification

Defining scenarios which build on policy objectives and on how markets and technologies might evolve in the future is the first step in infrastructure planning. Scenarios provide the foundation for identifying infrastructure needs, assessing gaps (i.e., the identified infrastructure needs not yet met by concrete projects' proposals), and evaluating the potential benefits of projects. In the EU context, scenarios are particularly relevant for the TYNDP and PCI selection process. Scenarios developed within the EU context are often also used as reference in National Development Plans (NDPs). Despite progress, several recurring issues continue to undermine the overall development of the scenarios' product.

Structural and persistent delays. ACER has identified persistent delays which affect the overall scenarios process, the TYNDP analysis and may also limit effective stakeholder engagement. Moreover, ACER noted that the current scenario development process, which involves multiple opinions (from MSs, ESABCC, EC and ACER)⁸ on the draft scenarios report, inevitably introduces additional complexity.

Limited transparency and questionable assumptions. While transparency and participation have slightly improved over time, key assumptions are still not always subject to timely consultation. As per ACER's recent TYNDP-related Opinions, the modelling often relies on unrealistic assumptions, such as overly optimistic hydrogen demand projections or low gas prices.

Misalignment between scenarios and National Energy and Climate Plan (NECPs). Although both the TEN-E (Article 12) and ACER [TYNDP Scenarios Guidelines](#) (2023) require scenarios to reflect the NECPs, discrepancies remain for the following reasons. NECPs often contain incomplete or outdated information, and their five-year update cycle does not align with the TYNDP's two-year development cycle. The data underpinning the scenarios is collected through transmission system operators (TSOs) and is neither fully verified nor challenged by ENTSOs, potentially leading to unjustified deviations from NECP data. Furthermore, NRAs have reported cases where the ENTSOs have not implemented NRAs' recommendations to correct national inputs. As a result, the approach used to build the 'central scenario' is inconsistent: some countries base their inputs on their NECPs, while others rely on "observed progress" or even on projections more optimistic than those found in their NECPs.

Governance challenges and conflicts of interest. The current governance model which allows ENTSG and ENTSO-E to both adopt and implement their own methodologies and which relies on the interactions between both bodies and national TSOs poses coordination challenges and potential conflicts of interest. These challenges may intensify once the hydrogen network operators are involved, as expected with the establishment of the European Network of Network Operators for Hydrogen (ENNOH). While some of the current tasks performed by the TSOs, ENTSO-E and ENTSG to develop scenarios for pan-European infrastructures and adequacy assessments could be reassigned to different entities, more modest, differentiated and incremental governance reforms are also possible. This Paper focuses on the latter.

Inconsistencies across EU-Level deliverables. There are also observed inconsistencies between the central scenarios used for the TYNDP and other related EU-wide deliverables, such as the European Resource Adequacy Assessment (ERAA) developed by ENTSO-E. There is room for further convergence.

⁸ Member States (MSs), European Scientific Advisory Board on Climate Change (ESABCC), European Commission (EC).

Objectives and proposed solutions

Objectives:

- Improve the scenarios development process by introducing appropriate checks and balances and increasing transparency, while limiting the risk of recurring delays which affects several other infrastructure-related processes.
- Increase scenarios coherence across different assessments and improve transparency and accessibility of NECP data.
- Strengthen the robustness of the 'central scenario' and its alignment with the foreseen national policies (i.e., NECPs) and EU goals, while performing reality checks to inform scenario building.

Proposed recommendations requiring amendments to the current legal framework:

- **Streamline and strengthen the scenarios development process by removing unnecessary opinions. Instead, mandate the European Commission or ACER to approve the underlying methodology.** This would require modifying Article 12 of the TEN-E Regulation, replacing the multiple opinions on the scenarios report with a single mandate for the European Commission or ACER to approve the methodology for developing scenarios. If ACER were to approve the methodology, this could replace the Scenario Framework Guidelines currently foreseen under Article 12, while leaving ACER the option to prepare them voluntarily. Like today, this process should culminate in the European Commission, after having consulted ACER, formally approving the final scenarios report or, if necessary, requesting amendments.
- **Include a 'trends & projections scenario', alternative to the central scenario, reflecting the progress towards meeting policy targets, in line with ERAA.** As described in the recent EC's report to streamline the European Resource Adequacy Assessment (ERAA) process⁹, the purpose of this scenario would be to analyse an alternative view of the future considering the actual pace of key supply and demand variables. This alternative scenario should be regularly updated and used in both the electricity, gas and hydrogen TYNDPs and the ERAA. To enable this, Article 12 of the TEN-E Regulation would need to be modified. Alternatively, the revised Article 12 could set sufficiently flexible criteria to allow the approved methodology to further define how to develop alternative scenarios to the central one.
- **Improve transparency and accessibility of NECP data.** All relevant NECP data should be available in a harmonised format and centrally publicly accessible. The regulation should provide for – or request – the development of a standard publication template, collecting input data needed for the TYNDP scenarios. This could be achieved by amending Regulation (EU) 2018/1999 (the Governance Regulation), in particular Article 3, Articles 8-9, Articles 13-14 and Annex I.

Proposed recommendations through better implementation of the current framework:

- **Introduce an input review step within the scenarios development process** where, once minimum requirements are defined in the approved methodology, ACER and NRAs review the inputs submitted by TSOs to ENTSO-E and ENTSG and their consistency with the NECPs and the scenarios used in the NDPs.
- **Aligning the timeline between TYNDP scenarios and NECPs.** To ensure full alignment of TYNDP scenarios with NECPs' policies and targets, primary updates of the central scenario used for infrastructure planning should be carried out only when new NECPs data are available. This would imply a core update of the TYNDP central scenario and underlying methodologies, every five years. However, the regulation should also allow for intermediate updates of the central scenario (i.e. between two NECP editions) in the event of a significant change in the adopted national and/or European policies and/or targets.

⁹ See <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52025DC0065>.

2.2. Ten-year network development plans (TYNDPs): simpler process and more effective oversight

Issues identification

This section elaborates on the main challenges related to the identification of infrastructure needs and project-level cost-benefit analysis.

ACER opinions come late in the process and have limited impact over ENTSOs deliverables. Currently, ACER Opinions on electricity¹⁰ and hydrogen¹¹ TYNDPs are issued “ex-post”, once the respective ENTSOs have the draft infrastructure gaps report or the complete TYNDP. As a result, these opinions have a limited impact over ENTSOs final deliverables.

Challenging timeline and process under current TEN-E framework. The envisaged processes from the current TEN-E Regulation led to very challenging TYNDP timelines. The new steps introduced increased oversight over ENTSOs’ work on scenarios, infrastructure gaps and CBA (e.g., by means of opinions from MSs, ESABCC, EC and ACER)¹², but proved very difficult to fit in the two-years cycle duration of TYNDPs and the PCI selection. Consequently, TYNDP results are recurrently significantly delayed and reduced in scope, impacting the availability of timely information for the selection process of PCIs. The opinions mentioned before are often overlooked while stakeholders have little time to scrutinise complex and abundant information during TYNDP and PCI processes.

Need for a more flexible planning approach. The sequential nature of the TYNDP planning process possibly leads to systematic delays, as scenario development, needs identification, and CBAs are conducted consecutively. ENTSO-E and ENTSG have acknowledged that some steps require more time than the two-years cycle allows, resulting in delayed and incomplete outputs that impact the overall quality of the TYNDP deliverables and affect the PCI selection and national planning. Given the different objectives of identifying infrastructure needs and gaps and the cost-benefit analysis of individual projects¹³, strict sequencing between the two processes does not seem essential. A more flexible approach could help ensure the timely delivery of both assessments at EU level.

Objectives and proposed solutions

Objectives:

- More effective regulatory oversight over the pan-European network planning deliverables as well as more effective stakeholders and institutions engagement and scrutiny throughout the process.
- Simplification and more realistic TYNDP timelines.

Proposed recommendations requiring amendments to the current legal framework:

- **Introduce a formal methodology for the identification of infrastructure needs and gaps** (currently referred to in the TEN-E Regulation as “infrastructure gaps identification”), similar to the existing framework for the CBA, by amending Article 13 of the TEN-E Regulation.
- **ACER to approve or amend ENTSO-E and ENTSG’s infrastructure needs and gaps methodology as well as the already foreseen CBA methodology.** By amending Article 11 and Article 13 of the TEN-E Regulation, ACER should be mandated to approve or request amendments to the draft methodologies developed by ENTSO-E and ENTSG for the infrastructure needs and gaps assessment and for the project cost-benefit analysis. Additionally, ACER should be empowered to scrutinise the compliance of ENTSO-E and ENTSG’s final draft reports, where these approved methodologies are applied, and, where necessary, request amendments, including adjustments to project data. The introduction of a formal methodology

¹⁰ See: <https://www.acer.europa.eu/news/acer-entso-es-2024-draft-ten-year-electricity-network-development-plan-progress-made-room-improvement>.

¹¹ See: <https://www.acer.europa.eu/news/acer-encourages-entso-g-further-improve-methodology-identifying-hydrogen-infrastructure-gaps>.

¹² Member States (MSs), European Scientific Advisory Board on Climate Change (ESABCC), European Commission (EC).

¹³ The infrastructure needs and gaps identification exercise should aim at providing an indication of the future infrastructure needs and it should only be based on the most conservative grids assumptions, without pre-judging individual projects. In contrast, the project-level CBA focuses on evaluating the specific benefits a project may bring, including socio-economic and environmental impacts.

for infrastructure needs and gaps, subject to approval or amendment beyond ENTSO-E and ENTSG, would not only ensure a systematic assessment of network needs and gaps but also provide a framework in which non-wire solutions can be consistently considered¹⁴.

- **Following the introduction of the (approved) methodologies, eliminate the requirement for the opinions on the draft infrastructure gaps report and on CBA methodology** currently foreseen by Article 11 and Article 13 of the TEN-E Regulation.
- **Remove the time constraint set by Article 13(1) for the preparation of the infrastructure gaps identification report.** Allow the timeframe for this assessment to be defined in methodology described above. This should allow for more realistic TYNDP timeframes.

¹⁴ See also section 2.4.

2.3. Integrated needs and Complementary EU layer for unaddressed gaps

Issues identification

Cross-sectoral coordination between electricity, gas, and hydrogen is essential for a resilient and future-proof energy system. While the modelling complexity is acknowledged, the level of sector-integrated approach at EU level could be more ambitious. In its current form, it can lead to a sub-optimal assessment of the infrastructure needs and possibly to higher overall energy system costs.

Concerning electricity, ACER's first [Monitoring Report on electricity infrastructure](#) development finds that grid capacity development in the electricity TYNDP showed a significant gap with identified cross-border grid capacity needs. In selected locations, cross-border capacity needs appear to arise without being addressed by corresponding concrete project proposals. While some of the electricity needs could also be solved through alternative and innovative non-infrastructure solutions, with such magnitude of required infrastructure investments, a sub-optimal infrastructure needs identification and the resulting selection of projects at EU level may have vast cumulative economic implications for each Member State, as grid costs become a main driver of the electricity bill.

Concerning hydrogen, while future infrastructure development will be necessary, there remains considerable uncertainty regarding its scale, geographical distribution, and timing. As ACER has already highlighted in its Opinions, this implies that hydrogen infrastructure needs assessments should largely follow a different approach than the one used for natural gas. The current approach remains rather broad and mainly focus on single sectors, without sufficiently accounting for sectoral interlinkages or considering alternative solutions that could help avoid overbuilding or locking in suboptimal investments. In practice, this allows most project promoters to claim that their projects support the uptake of the hydrogen sector, instead of focusing on "no-regret" options. While for hydrogen it may be premature to refer to unaddressed gaps, the recommendations presented in this section could help identify the essential network level needed to support the initial development of the hydrogen market development.

Objectives and proposed solutions

Objectives:

- Promote further sectoral integration in infrastructure needs assessment.
- Seek a robust and neutral identification and prioritisation of infrastructure needs, helping to align the network development with societal benefits and cost-efficient solutions.

Proposed recommendations requiring amendments to the current legal framework:

- **Request an integrated assessment of needs and gaps as opposed to single-sectorial assessments.** Amend Article 13 to introduce a mandate for an integrated, multi-sectoral assessment of electricity, hydrogen, and natural gas networks needs and gaps. This assessment should be based on common assumptions and a unified methodology for identifying infrastructure needs and gaps. To account for sector-specific characteristics and the different levels of maturity among the energy systems considered, the final 'infrastructure needs and gaps identification' report could still include separate chapters for electricity, hydrogen, and natural gas, allowing for a detailed treatment of sector-specific elements where needed.
- **Remove the reference to a separate consistent and progressively integrated model.** The consistent and progressively integrated model, currently foreseen in Articles 11(10)–11(13), should be superseded into the integrated needs and gaps assessment under Article 13, to avoid duplication, as the integrated approach to infrastructure needs, under Article 13, should become the default framework.

Proposed recommendations through better implementation of the current framework:

- **A complementary step should be included in the current process for identifying infrastructure needs and gaps to ensure that all remaining gaps are identified, prioritised, and addressed.** Before introducing new instruments, it should first be explored how to best leverage existing frameworks. These include the ENTSO-E and ENTSG infrastructure gaps

reports under Article 13 of the TEN-E Regulation, the Regional Investment Plans¹⁵, the High-Level Groups¹⁶ facilitating the cooperation between Member States and partner countries, the role of the European Coordinators¹⁷, the regional cooperation on cross-border issues between NRAs¹⁸ and between TSOs¹⁹, and the PCI selection process. In some instances, better implementation of existing processes may be sufficient, thereby avoiding additional complexity, whereas in others, targeted modifications to their regulatory framework or responsibilities may be needed²⁰.

- **With regards to the PCI selection process and the role of the TEN-E Groups, a mandate for a systematic assessment of unaddressed needs should be introduced.** Following the selection of the proposed PCI projects, TEN-E groups should assess whether all identified needs are adequately mitigated. Any remaining infrastructure gaps should be explicitly documented, and Member States should be required to explain why these gaps persist. While this recommendation could, in theory, be achieved within the current framework, ACER recommends that a reference to “unaddressed infrastructure needs” is added to Annex III.2(2) of the TEN-E Regulation to ensure clarity and a systematic follow-up.

¹⁵ Article 34(1) of Regulation 2019/943.

¹⁶ https://energy.ec.europa.eu/topics/infrastructure/high-level-groups_en.

¹⁷ Defined according to Article 6 of the TEN-E Regulation.

¹⁸ Article 80 of Directive (EU) 2024/1788 and Article 61 of Directive (EU) 2019/944.

¹⁹ Annex III.1(2) of the TEN-E Regulation.

²⁰ This would be the case, for example, for the Regional Investment Plans, where, if the process were to include proposing solutions for unaddressed needs, it would likely require adapting the regulation. And, in addition, the regulatory framework would consequently need to be amended to provide stronger regulatory oversight than is currently in place.

2.4. Promote infrastructure efficiency and alternative solutions

Issues identification

The energy transition calls for a rapid expansion of electricity grids at both transmission and distribution levels. Technological progress and digitalisation offer new solutions to system needs that can increase the efficient use of existing and new electricity grids while reducing lead times and overall cross-border capacity needs. Grid-enhancing technologies (GET) may offer a faster and more cost-effective way to increase electricity infrastructure capacity compared to traditional network expansion.

As identified in the [ACER-CEER 2024 Electricity Systems Paper](#)²¹, regulatory frameworks should incentivise operators to explore non-wire solutions to increase electricity network capacities.

Although Article 13 of the TEN-E already requests that when assessing the infrastructure gaps ENTSO-E and ENTSG consider with priority all relevant alternatives to new infrastructure, this principle is not fully reflected in practice. The ACER [Infrastructure Monitoring report on electricity infrastructure development](#) further highlights the need that TSOs and DSOs consider such measures to make additional capacity available without adding network assets.

Objectives and proposed solutions

Objectives:

- Recognise the role and promote the use of electricity GET solutions in existing and new infrastructures to meet capacity needs.
- Encourage a faster and more efficient expansion of electricity grids by leveraging both traditional infrastructure investments and innovative technological solutions.

Proposed recommendations through better implementation of the current framework:

- **Alternative solutions should be systematically integrated into the project identification process** based on their potential to address, partially or temporarily, an identified need. Projects should therefore demonstrate the evaluation of non-wire solutions in the TYNDP, which also serves as the basis for the PCI selection process. To ensure that these options are properly considered, the methodology for identifying infrastructure needs and gaps should be approved or, at least, amended by an entity other than ENTSO-E and ENTSG (see section 2.2). ACER exercise on unit investment costs could further support this effort by enhancing transparency on the level of costs of non-wire solutions (e.g. digitalisation and GET solutions) and promoting best practices sharing across Europe.

²¹ See p. 10, section 4.3, non-wire alternatives to increase network capacity.

2.5. Strengthen and simplify the selection process of Projects of Common Interest (PCIs)

Issues identification

When reviewing the current PCI selection process, several issues have been identified. Some of the issues stem from gaps in the existing regulatory framework, while others relate to implementation challenges that may not require changes to the TEN-E Regulation. Addressing both aspects is essential to improve the effectiveness, transparency, and robustness of the PCI process.

Too many Regional Groups leading to cross-regional inconsistencies and duplication of effort. The approach of Regional Groups does not always guarantee cross-regional consistency early in the selection process and may result in potentially competing projects being assessed independently from each other in different groups. Having many regional groups also increases the administrative burden of the PCI selection process (e.g. in terms of the number of meetings discussing similar content).

No effective differentiation by project maturity. The PCI selection process does not effectively differentiate between “mature” and “non-mature” projects. While the TEN-E framework formally recognises differences in maturity²², in practice, all candidates follow the same selection procedure, regardless of their stage of implementation. This process might not properly reflect the differing implementation risks, uncertainties around costs and benefits and financing needs among projects.

Insufficient quantification of infrastructure needs. The current process consists of two steps: first, the identification of needs by each Member State, and second, the assessment of project benefits. However, the infrastructure needs are often insufficiently quantified. In many cases, needs are identified upon qualitative indications from Member States, without a systematic quantification of the capacity needs.

Lack of systematic follow-up on unaddressed needs. Once the PCI list is established, there is no systematic follow-up to assess whether the selected projects adequately mitigate all identified infrastructure needs. This lack of follow-up means that unaddressed needs may remain unresolved, without requiring Member States to explain why these gaps persist.

Lack of timely and complete project information. The lack of timely and complete information provided to Regional Group members during the PCI process may hinder their ability to assess projects effectively and to replicate the adopted methodology consistently. This lack of timely information also affects NRAs when assessing PCI candidates during the PCI selection process.

Objectives and proposed solutions

Objectives:

- Favour a more robust identification of mature PCIs.
- Streamline and significantly reduce the administrative burden.
- Enhance the transparency and consistency on PCI candidates' information and assessment.
- Discuss and monitor unaddressed infrastructure needs during the PCI selection meetings to ensure that critical gaps are addressed systematically.

Proposed recommendations requiring amendments to the current legal framework:

- **Replace the “Priority Corridors” and “Areas” described in Annex I with EU-wide thematic groups, based on type of energy carrier.** The EU-wide thematic groups proposed are the following four: electricity onshore and offshore corridor, hydrogen corridor, smart electricity and smart gas grids. This reform would reduce the number of groups from fourteen to four, improving the identification of synergies and competition among projects, and significantly decreasing the administrative burden.
- **Define criteria for “mature PCIs” and “non-mature PCIs”.** Amend Articles 3 and 4, and Annex II of the TEN-E Regulation to ensure that the final PCI list distinguishes between these two

²² The current TEN-E Regulation refers to 'projects having reached a sufficient degree of maturity,' but it does not provide a definition of what constitutes maturity.

maturity levels. Project promoters should provide evidence for their inclusion in the PCI list related to their maturity level, with less advanced projects would only need to demonstrate they address a proven infrastructure need. This distinction, already envisaged in the TEN-E Regulation, should be clearly applied to electricity projects and needs to be enforced. For hydrogen, however, the sector earlier stage of maturity might call for a more gradual approach.

Proposed recommendations through better implementation of the current framework:

- **Introduce a simpler PCI application/evaluation process for PCIs with an advanced stage of implementation.** For example, PCIs having reached the final investment decision or having received EU grants for work, should retain their PCI status subject to demonstration of progress.
- **Improve the approach for the quantification of infrastructure needs in the PCI selection process.** Any infrastructure need identified through TEN-E groups' assessments should be clearly quantified and linked to a proposed or potential infrastructure solution. Member States, supported by NRAs, when presenting their national needs, should also be required to specify the infrastructure solution that, in their view, would address those needs.

2.6. Enhance the monitoring of PCIs

Issues identification

In ACER view, the monitoring of PCI and PMI projects has room for improvement. Article 5 of the TEN-E Regulation requires project promoters to submit an annual monitoring report on PCI projects and update their project data every two years for the purpose of PCI selection. This creates duplicative and burdensome reporting obligations. Meanwhile, ACER has only two months to consolidate these monitoring reports, an insufficient timeframe for conducting a thorough analysis and developing meaningful recommendations. Moreover, the TEN-E Regulation limits ACER monitoring of PCIs to evaluating the progress achieved in implementing the PCI projects and how to overcome any encountered delay.

ACER is also tasked with issuing an Opinion on the draft PCI list. However, this step occurs too late in the selection process to have a meaningful impact. Efforts could be redirected toward developing a revamped and more impactful PCI monitoring report, which would provide key insights in the PCI selection process.

Objectives and proposed solutions

Objectives:

- Make ACER PCI monitoring more meaningful during the PCI process.

Proposed recommendations requiring amendments to the current legal framework:

- **Make the reporting process less burdensome for project promoters, by replacing the current annual reporting by project promoters with a biennial one**, by amending Article 5(4) of the TEN-E Regulation.
- **It is suggested that ACER no longer be required to issue an Opinion on the draft PCI list**, in favour of a more impactful PCI monitoring exercise (see below). Hence, Article 5 and Annex III.2(4) of the TEN-E Regulation should be amended accordingly.

Proposed recommendations through better implementation of the current framework:

- **Enhance the PCI monitoring by ACER and make it a key input for PCI selection.** ACER PCI monitoring and its recommendations should be better considered within the PCI selection process. The monitoring should take place, as today, biennially, based on data submitted every two years by project promoters and it should cover both projects applying for the next PCI list and those already on the current list. This approach ensures that all PCI projects remain subject to monitoring until they officially lose their PCI status with the adoption of the new final list. The ACER monitoring report should include, where relevant, recommendations on PCIs, such as excluding applicants from the process or removing already PCIs from the list when benefits are not deemed outweighing the cost or progress in their development is lacking.

2.7. Cross-border cost allocation (CBCA)

Issues identification

As identified in the ACER [Monitoring Report on electricity infrastructure](#), for electricity projects there are currently at least three distinct mechanisms²³ that enable the sharing of costs and benefits, namely cross border cost allocation (CBCA) for PCIs, inter-TSO-compensation (ITC), and congestion income distribution (CID). These three mechanisms fall short in adequately addressing the equitable sharing of infrastructure cost and benefits arising from cross-border trade. As hydrogen infrastructure projects gradually mature, appropriate cost and risk sharing mechanisms will also become increasingly important to support efficient and equitable cross-border development.

Given that the TEN-E Regulation exclusively addresses the CBCA mechanism, this document is limited to examining CBCA and potential improvements to its application. In ACER view, the following issues should be addressed to improve the current CBCA process.

CBCA as a precondition for CEF grants for works. Under the existing TEN-E Regulation, securing a CBCA decision is a prerequisite for obtaining CEF grants for works. While this condition was likely designed to ensure that there is an agreement on how to share costs and benefits among concerned countries before considering the need for financial assistance, it has in practice led to many CBCA requests primarily motivated by the promoters need to meet the formal eligibility requirements and deadlines to access the CEF funding.

Lack of early insight on benefit distribution. The method used to identify benefits for PCI selection could better support the CBCA processes. While PCI projects are ranked and selected based on their potential EU-wide benefits, national-level benefit assessments, despite required to be included in the TYNDP and PCI processes pursuant to Annex V(7) of the TEN-E Regulation, are in practice only carried out when an investment request by the concerned project promoter(s) is submitted for a specific PCI alongside the CBCA proposal. This implementation gap means that PCI projects are selected without a first indication of the potential distribution of benefits among Member States.

Objectives and proposed solutions

Objectives:

- Ensure that CBCA requests reflect a genuine cross-border benefits and cost allocation, rather than being driven primarily by the prospect of receiving grants.
- Improve early understanding of the cost-benefit distribution and enhance coordination and scrutiny already at the early stages of cost and benefit identification process.

Proposed recommendations requiring amendments to the current legal framework:

- **Remove the mandatory and sequential step between CBCA and CEF grants for works.** While CBCA and CEF grants can be considered interlinked in case of spread distribution of benefits across countries, there should not be a mandatory link between the two instruments. The mandatory and sequential step of CBCA and CEF grants for works, currently foreseen under Article 18(2)(b) of the TEN-E Regulation, should be therefore removed, allowing the two processes to be run in parallel, while it should be possible for project promoters to directly apply for CEF under the condition of a positive statement of the hosting NRA(s). In some cases, in fact, CBCA decisions may not be appropriate (e.g., when benefits, according to the results of the CBA, outweigh costs in all hosting countries), and a direct request for CEF support should be possible. For those cases where the hosting NRA has identified the need for both CBCA and CEF, it should also be allowed for a two-step CBCA process (i.e., a preliminary CBCA to identify cost-sharing and the financial gap for CEF, followed by a final CBCA reflecting the granted CEF support).

Proposed recommendations through better implementation of the current framework:

- **Ensure that the identification of potential beneficiary countries is carried out already in the PCI selection process.** For projects that can demonstrate having reached a sufficient level of maturity, the revised TEN-E should require the introduction of a preliminary assessment by

²³ See p. 7-8, section 3.2 Recognise shared benefits of infrastructure

the TEN-E groups, as part of the PCI selection process, to identify those Member States for which the assessed project has a potential net positive impact, based on the scenarios described in section 2.1. This would provide early insights to support future discussions on cost and benefit sharing among Member States and NRAs in the context of investment requests, also facilitating the early involvement of potentially all concerned Member States. While better implementation within the current framework could in principle achieve this, including such requirement in Article 4 and/or Annex III of the TEN-E Regulation could provide stronger guarantees.

2.8. Improve transparency of network planning processes

Issues identification

Transparency is a fundamental principle embedded throughout the TEN-E Regulation, with multiple references across its various processes. Despite this, there is a clear and persistent need to further improve both the transparency and accessibility of network planning information.

As identified in the ACER [Monitoring Report on electricity infrastructure](#), the information about non-TYNDP projects and implemented investments remains scattered and not easily available in comparable formats. This is particularly true, though not limited, to the DSO landscape, where, with almost 3,000 electricity DSOs in Europe, stakeholders often report difficulties in tracking or comparing distribution network development plans and investment information. Overall, this poses challenges to a proper and comprehensive monitoring of all infrastructure development and analysis by concerned institutions, interest groups and independent research institutions. Collecting and making this information accessible in a consistent and user-friendly manner would significantly enhance the monitoring, the analysis and more informed decision-making at all levels. This information could also highlight the need to developing industrial capacities for energy infrastructure.

Objectives and proposed solutions

Objectives:

- Further increase the transparency on incurred and planned infrastructure investments, and provide visibility of infrastructure developments, to timely develop supply chain capacities and to enable effective oversight by ACER/NRAs.

Proposed recommendations through better implementation of the current framework:

- **The European Commission should conduct a comprehensive review of the existing infrastructure-related data reporting obligations**, identifying missing or overlapping data requirements, and most suitable process for the timely publication of infrastructure data.