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Beyond Megawatts

Grid Readiness and Energy Competitiveness in the Balkans

A New Polis white paper
prepared in cooperation with E3 International

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Introduction

Imagine an investor looking for a site in Southeast Europe for a data centre, battery factory or another electricity-intensive project. The first energy question is no longer simply how much electricity a country produces or how many gigawatts of generation it has. It is much more practical: where can I connect a 100 MW load, how long will it take, and what will it cost?

Across the Balkans, that question is becoming harder to answer just as demand for new grid connections is growing. Renewable generation is expanding, storage projects are entering the system and transmission networks are being reinforced, but available power at a specific location remains difficult to infer from national energy statistics.

This analysis of eight Balkan electricity systems looks beyond installed megawatts to three factors that increasingly determine whether energy can translate into investment: generation, locational grid capacity and system flexibility. Together, they reveal a new measure of regional competitiveness: not simply how much power a country has on paper or what electricity costs on average, but whether a large consumer's power demand can be met at a particular location, with the required reliability and power quality, across its hourly and seasonal demand profile.

Key Findings

- ***Installed MW are not usable MW.*** Grid location, connection conditions and flexibility determine what a new consumer can actually access.
- ***Grid transparency remains uneven.*** Public visibility of capacity, connection processes and queues varies substantially across the region.
- ***Time-to-power is still difficult to assess.*** Comparable end-to-end timelines for large new loads are generally unavailable.
- ***Connection costs are not directly comparable.*** Projects face different combinations of connection charges and network-reinforcement costs.
- ***Flexibility increasingly matters.*** Storage is growing rapidly, but operational capacity remains very different from announced, licensed or connected pipelines.

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1. Scope and Methodology

This white paper examines the readiness of eight Balkan electricity systems to accommodate large new electricity demand. It covers Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Montenegro, North Macedonia and Serbia, focusing on three elements of power-system readiness: generation, locational grid capacity and system flexibility. The analysis draws primarily on 2025 system data and on regulatory, market and project information available in 2026 from transmission system operators, regulators, government institutions and other sector sources.

The 100 MW used throughout the paper is an analytical benchmark rather than a definition of a typical investment project. Actual power requirements vary widely by sector, technology and individual facility. A large data centre may require this scale of continuous supply, but so may advanced manufacturing, battery production, industrial electrification, hydrogen or e-fuels projects and other electricity-intensive activities. The 100 MW benchmark is large enough to expose constraints that national generation statistics alone cannot reveal. It allows us to ask a practical question: could a new major consumer obtain this amount of power at a specific location, on what terms and within what timeframe?

The comparison distinguishes carefully between different stages and types of capacity. Installed generation, transmission capability, transformer capacity, indicative connection capacity, capacity committed to a particular project and firm connection capacity are not treated as interchangeable. The same principle applies to flexibility resources: operational storage is distinguished from projects that are licensed, selected for financing, contracted for connection or still in development. Where comparable public information is not available, the paper does not attempt to replace it with an estimated ranking.

Power-system readiness is only one part of investment attractiveness. Decisions on major industrial and infrastructure projects also depend on the quality and predictability of regulation, administrative capacity, permitting and implementation, protection of property and contractual rights, corruption risks, taxation and access to finance. Human capital, labour costs and skills, transport and digital infrastructure, land and water availability, local acceptance and the role of formal and informal networks can be equally important. In some cases, these factors may outweigh an apparent advantage in electricity supply.

This paper does not attempt to rank the eight countries by their overall investment climate or assess the quality of their governance and institutions. Its purpose is deliberately narrower: to examine how far their electricity systems can translate energy resources into power that a new large consumer can actually connect to and use. The findings should therefore be read as one layer of a broader investment assessment, not as a ranking of the best places to invest.

2. From Megawatts to Usable Power

For decades, the size of an electricity system could be described with a familiar set of numbers: installed generation capacity, annual production, peak demand and the share of different energy sources. These indicators remain important. But they are no longer sufficient on their own to explain a country's ability to accommodate a new generation of electricity-intensive investment.

A data centre, battery factory, electrified industrial plant or hydrogen facility does not consume a country's installed capacity. It requires power at a particular location, through a particular part of the grid, at a particular time and with a high degree of reliability. For a new large electricity consumer, the critical question therefore shifts from *"How much electricity can this country produce?"* to *"How much usable power can the system actually deliver where new demand will be located?"*

The distinction matters particularly in Southeast Europe, where electricity systems differ greatly in scale, generation structure and infrastructure. Yet across these differences, the same problem emerges: national energy abundance and site-level power availability are not the same thing.

Bulgaria is one of the larger systems in the region, but scale alone does not describe the changing structure of its electricity system. By the end of 2025, ESO reported 1,382 MW of battery energy storage, while the country's transmission system was strongly integrated with neighbouring markets through interconnections with Romania, Serbia, North Macedonia, Greece and Türkiye ([ESO, Statistical Pocketbook 2025, pp. 3, 15](#)).

Serbia is smaller but still represents one of the region's substantial electricity systems. What matters for grid readiness is that 94.81% of its installed generation capacity was connected directly to the transmission system in 2025. The system is also strongly interconnected, with 21 interconnection lines at 400, 220 and 110 kV linking it to neighbouring electricity systems ([AERS, Annual Report 2025, pp. 24-27](#)).

In Bosnia and Herzegovina, a second consecutive year of exceptionally unfavourable hydrological conditions reduced generation from major hydropower plants by **6.3%** in 2025, while wind generation increased by 65.1% and transmission-connected solar generation by 127%. At the same time, the transmission system has substantial infrastructure relative to the size of the domestic market, including 13,431 MVA of installed transformer capacity and 37 international interconnectors ([SERC/DERK, Report on Activities 2025, pp. 7, 88](#)).

Smaller systems can nevertheless have substantial transmission infrastructure relative to domestic demand. North Macedonia's transmission backbone includes 577.06 km of 400 kV lines and 1,656.64 km of 110 kV lines. The system is connected to Kosovo, Serbia, Bulgaria and Greece through five 400 kV interconnections, while the new 400 kV link toward Albania is intended to complete the country's connection along Corridor 8 ([ERC, Annual Report 2025, pp. 48-49](#)).

Montenegro's domestic electricity system is small, but CGES reports 4,464.5 MVA of installed transformation capacity, while the transmission network plays an important regional role through connections with neighbouring systems and the submarine HVDC link with Italy. The contrast illustrates why the size of a domestic generation fleet and a country's position within the wider regional electricity system can tell quite different stories ([CGES, Annual Business Report 2025, pp. 28-29](#)).

Albania remains overwhelmingly dependent on hydropower, giving the system an important source of renewable and potentially flexible generation but also exposing it to hydrological variability. That vulnerability was visible in the third quarter of 2025, when net domestic electricity production fell by 31.3% year on year, from 1.57 TWh to 1.08 TWh, while gross electricity imports increased by 65.3%, from 762 GWh to 1.26 TWh (*INSTAT, Balance of Electric Power, Q3 2025, pp. 1–3*).

These differences matter. A large generation fleet provides scale, but it says little about where electricity can actually be delivered. A smaller system may compensate partly through strong interconnections. A hydro-rich country may have considerable resource flexibility while remaining exposed to dry periods. Rapid growth in solar and wind creates another set of challenges, because installed renewable capacity says little about whether electricity will be available at the hours when a new consumer needs it.

Cross-border infrastructure can mitigate some of these constraints by allowing systems to import during shortages and export surpluses. But interconnection cannot solve every problem. Neither can high annual production, a large generation fleet or substantial transformer capacity. None of these indicators tells a project developer whether a particular industrial zone or development site can accommodate another 50, 100 or 200 MW without significant grid reinforcement.

This is where conventional descriptions of electricity systems reach their limit. Installed megawatts tell us how large an electricity system is. They do not necessarily tell us how usable its power is.

Table 1. Basic Scale of the Eight Electricity Systems, 2025

Country	Installed power capacity, MW	Domestic electricity production, TWh	Transmission network, km
Albania	3,475	7.47	3,423
Bosnia and Herzegovina	5,547	14.54	6,521
Bulgaria	18,668*	40.20	16,152
Croatia	5,793†	13.44	7,908
Greece	25,740‡	59.50§	14,512
Montenegro	1,158	2.37	1,587
North Macedonia	3,163	6.12	2,234
Serbia	8,868	34.25	10,115

* Bulgaria: total reported installed capacity includes 1,382 MW of battery energy storage facilities.

† Croatia: installed capacity refers to total available power-plant capacity reported as of 1 July 2025.

‡ Greece: Net Generation Capacity, inclusive of storage, as reported by ENTSO-E for 1 January 2025.

§ Greece: domestic electricity production combines IPTO data for the interconnected system and HEDNO data for the non-interconnected islands.

Notes: Figures refer to 2025 unless otherwise stated. Installed capacity represents operational or reported power-generation capacity according to the respective national or system source. Electricity-production statistics are rounded and national reporting conventions may differ between gross, net and system-wide domestic production. Transmission-network length refers to the high-voltage transmission system reported by the respective TSO or regulator and may include different voltage classes.

Sources: Albania: ERE, *Annual Report 2025*; INSTAT, *Balance of Electric Power, 2025*; OST, *Description of the Transmission System*. Bosnia and Herzegovina: SERC/DERK, *Report on Activities 2025*. Bulgaria: ESO, *Statistical Pocketbook 2025*. Croatia: OIEH, *RESC Q2 2025 Report*; OIEH, *Croatia 2025 Annual Electricity Review*; HOPS, *Transmission Network*. Greece: ENTSO-E, *Statistical Factsheet 2025*; The Green Tank, *Trends in Electricity Production – December 2025*; ADMIE Holding/IPTO, *Annual Financial Report 2025*. Montenegro: Ministry of Energy and Mining, *Report on Implementation of the Energy Balance for 2025*; CGES, *Annual Business Report 2025*. North Macedonia: ERC, *Annual Report 2025*. Serbia: AERS, *Annual Report 2025*.

3. The Missing 100 MW: Where the Grid Becomes the Bottleneck

If installed generation tells only part of the story, the next question is more practical. Suppose an investor is considering a new facility in Southeast Europe that will require 100 MW of continuous power. Where can a 100 MW load be connected?

It sounds like a question that should be relatively easy to answer. Transmission system operators publish development plans, network maps, technical reports and connection procedures. Yet across much of the Balkans, publicly available information becomes considerably less precise when the question shifts from the capacity of the system as a whole to the capacity available for a specific new large load.

This does not mean that 100 MW is unavailable. It means that, in most of the countries examined by New Polis in cooperation with E3 International, the availability of such capacity cannot be established from national system statistics alone.

From network size to connection capacity

The physical scale of Balkan transmission systems varies substantially. But network size should not be confused with available capacity for new demand. Transformer capacity measures the installed capability of transmission assets; it does not show how much capacity remains unused at a particular substation. Transmission-line length says even less about whether a specific node can accept an additional 100 MW while satisfying voltage and system-security requirements.

Serbia illustrates the distinction particularly clearly. EMS describes a connection process beginning with a Connection Study, followed where necessary by preparation of planning and technical documentation, permits, construction of the connection and missing infrastructure, connection approval, verification, temporary connection and finally permanent connection (*EMS, Connection to the Transmission System*).

The same EMS page explains what happens inside the study. For all projects submitted in the relevant connection-study cycle, EMS checks power flows, voltage conditions, N-1 security and short-circuit currents. Depending on the results, the proposed connection may require construction of missing infrastructure, connection at reduced approved power or operational restrictions (*EMS, Connection to the Transmission System*).

EMS also publishes lists of submitted connection requests, providing visibility into projects already entering the connection process. This improves transparency about the connection pipeline, although it does not show how much capacity remains available for a new large load at a particular location.

In other words, the existence of generation and transmission infrastructure at national level does not establish that a specific 100 MW load can be accommodated at a chosen location.

OST's Transmission Network Code states that new connections or modifications in Albania must not adversely affect existing users and lays down technical requirements for each connection point. Once an application is accepted and the applicant accepts the technical conditions and connection offer, OST and the network user proceed to a Connection Agreement (*OST, Transmission Network Code, Article 36*). OST separately publishes the procedures and documentation requirements for new connections and

modifications to existing connections (*OST, Regulation of the Procedures of New Connections and the Modification of the Existing Ones in the Transmission System*).

North Macedonia provides an especially useful comparison. MEPSO's *Transmission System Development Plan 2025-2035* devotes an entire section to “Connections of New Users to the Transmission Network”. Rather than presenting a single national number for unused connection capacity, the plan examines new users and the network measures required to integrate them. It also stresses that integration of large new projects can require additional transmission infrastructure and system reserves (*MEPSO, Transmission System Development Plan 2025-2035*).

Bosnia and Herzegovina also treats connection as a regulated, project-specific process rather than a simple national capacity figure. DERK describes the country's Grid Code as regulating connection conditions, procedures, contracts and criteria, alongside system planning, congestion management and operational security (*DERK, Rules and Codes – Grid Code*). The Grid Code itself is available from the regulator as the technical framework governing access to and use of the transmission system (*DERK, Grid Code*).

Croatia publishes useful connection information, but with an important limitation. HOPS publishes node-level information on connection possibilities, but the published capacity information is oriented toward the connection of new generation rather than new electricity demand. For consumers, HOPS publishes the connection procedure and considers the technical possibilities for a new connection or an increase in connected power on a project-specific basis (*HOPS, Information on Connection Possibilities to the Transmission Network; HOPS, Rules on Connection to the Transmission Network, Article 1, p. 1*).

The Croatian example also highlights an important limitation of our comparison: published connection information may help an investor understand the network, but it should not be mistaken for a standing guarantee that a particular 50, 100 or 200 MW load can be connected at a specific location.

The broader regional pattern is therefore clear. Information on network infrastructure is widely available. Public information that allows an investor to identify firm, immediately connectable blocks of new demand is much less common.

“Available power” can mean very different things

There is also a methodological problem. Numbers that appear to describe available grid capacity are not necessarily comparable. Published capacity figures can refer to very different things: the transfer capability of part of the network, additional demand or generation considered feasible under a planning scenario, indicative connection capacity shown on a digital platform, or power already committed to a particular project. A connection agreement may also reserve capacity that is no longer available to other users. These figures are not interchangeable.

Greece shows why the distinction matters. In December 2024, IPTO and Serverfarm announced the creation of the Gemini joint venture to develop hyperscale-ready data centres in Greece. The first Greater Athens campus was announced with 130 MW of committed power. IPTO also stated that its contribution would include reliable power supply and strategically located sites with access to electricity and optical-fibre networks (*IPTO, IPTO and Serverfarm join forces to spearhead Hyperscale Data Center development and operations in Greece*).

That 130 MW figure is highly relevant because it demonstrates that a hyperscale-class project can secure a connection of this magnitude at a particular Greek location. But it

cannot be interpreted as 130 MW of generally available capacity elsewhere in Attica, still less across Greece. Committed project power is evidence of one connection pathway, not a map of remaining grid headroom.

Greece has nevertheless moved toward greater demand-side connection transparency. In 2026, IPTO began publishing information on the progress of High Voltage Customer connection applications, including data centres. This provides visibility into actual large-load demand entering the connection process, although it still does not constitute a public map of remaining node-level capacity.

Bulgaria has the clearest pre-application capacity information identified in this review. ESO operates an Electronic Free Capacity Map that provides indicative substation-level information for both electricity generation and consumption. Free capacity is expressed as the maximum active power in MW that could be connected at a given ESO substation without overloading transmission-network elements as a result of that connection. (*ESO, Free Connection Capacity*). The tool allows users to explore indicative connection capacity geographically rather than relying solely on aggregate national network statistics.

This is useful for early-stage site screening. But an indicative capacity shown by such a tool is still not the same thing as a binding connection offer. A large consumer has to proceed through the relevant connection procedure and technical assessment before capacity becomes contractual.

Montenegro provides another useful example of why terminology matters. CGES's Lastva project involved construction of the 400/110/35 kV Lastva substation with 2 × 300 MVA transformation capacity, together with reinforcement of the 400 kV network. CGES states that the wider project increases grid transfer capability by approximately 500 MW (*CGES, Substation 400/110/35 kV Lastva*).

The same CGES project documentation explains the purpose of the reinforcement: to remove bottlenecks, improve supply security, support the Montenegro-Italy interconnection and strengthen the coastal and northern parts of the system. The project is also designed to satisfy the N-1 criterion during 500–1,000 MW transit through the submarine cable (*CGES, Substation 400/110/35 kV Lastva*). But this does not mean that a new industrial customer can request 500 MW at Lastva. Grid transfer capability, transformer rating, spare substation capacity and firm load-connection capacity are four different things.

Comparing pre-application grid transparency

A review of publicly available connection information across the eight systems shows that transparency itself takes different forms. In most cases, investors can find connection procedures and transmission-development plans, but information that helps identify where substantial new electricity demand might actually be accommodated before entering a formal connection process is much less common.

The comparison below therefore does not rank the eight systems by available grid capacity. Instead, it asks what a prospective large electricity consumer can establish from publicly accessible information before project-specific technical studies begin.

Table 2. What Can a Large Electricity Consumer Know Before Entering the Formal Connection Process?

Country	Public node-level headroom indication for new load	Public connection procedure	Public visibility of large-load connection requests	Practical reading
Albania	Not identified	Yes	Not identified	Connection rules are public, but demand

Country	Public node-level headroom indication for new load	Public connection procedure	Public visibility of large-load connection requests	Practical reading
				headroom remains project-specific
Bosnia and Herzegovina	Not identified	Yes	Not identified	Regulatory and connection frameworks are public, but site-level capacity for new demand is not readily visible
Bulgaria	Yes	Yes	Not identified	Indicative connection capacity is publicly available geographically for both generation and consumption
Croatia	Not identified	Yes	Not identified	Node-level connection-capacity information is published for new generation, but equivalent information for new load was not identified
Greece	Not identified	Yes	Yes	High-voltage customer applications, including data centres, are publicly tracked, but no general public load-headroom map was identified
Montenegro	Partial	Yes	Not identified	CGES provides an indicative transmission map for connection screening, but not a firm node-level headroom figure for new load
North Macedonia	Not identified	Yes	Not identified	Development planning provides useful connection context, but no public demand-headroom screening tool was identified
Serbia	Not identified	Yes	Yes	Detailed Connection Study procedures and submitted requests are public; available capacity remains study-specific

Note: The table reflects publicly available information identified by New Polis as of September 2026. “Not identified” means that no publicly accessible investor-facing information of the specified type was found during this review; it does not establish that such information does not exist or cannot be obtained directly from the relevant system operator. “Partial” indicates that public information can support preliminary connection screening but does not provide a clear node-level headroom figure for new electricity demand. “Public node-level headroom indication” refers to information that can help a prospective large consumer assess potential connection capacity at specific network locations before a project-specific connection study. Information published for new generation is not treated as equivalent to capacity available for new load.

Sources: New Polis review of publicly available transmission-system connection information and related documents: Albania, [OST, Guidance Documentation / Connection Documentation and Transmission Network Code](#); Bosnia and Herzegovina, [SERC/DERK, Rules and Codes / Grid Code and National Level Related Documents](#); Bulgaria, [ESO, Electronic Free Capacity Map – methodology and explanation](#); Croatia, [HOPS, Information on Connection Possibilities to the Transmission Network](#) and [HOPS, Network Connection](#); Greece, [IPTO/ADMIE, High Voltage Customer Connection Information](#); Montenegro, [CGES, Connection to the Transmission Network](#); North Macedonia, Energy Community Secretariat, [North Macedonia Implementation Report 2025](#); Energy Community, [Technical Assistance for the Connection Network Codes Implementation in the Energy Community: North Macedonia](#); Serbia, [EMS, Connection to the Transmission System](#)

The comparison reveals an important distinction between capacity transparency, process transparency and queue transparency. Bulgaria provides the clearest example in this review of pre-application capacity visibility for new consumption: ESO's electronic platform provides indicative free capacity at individual substations for both generation and consumption. Serbia, by contrast, provides comparatively strong visibility into the connection-study process and submitted requests, while Greece has begun publishing information on high-voltage customer connection applications, including data centres. These forms of transparency are useful in different ways and should not be treated as equivalent.

The missing variable is time

Power availability is only half of the investment question. The other half is time. A 100 MW connection that is technically feasible but requires a new substation, reinforcement of a transmission corridor, permitting and several years of construction is a fundamentally different investment proposition from 100 MW that can be supplied using existing infrastructure. This is particularly important for data centres, where time-to-power is increasingly central to site selection. The same logic applies to battery manufacturing, industrial electrification, hydrogen production and other large electricity users.

Yet across the eight systems examined by New Polis, we did not identify a sufficiently comparable public benchmark answering a deceptively simple question: how long does it normally take to connect a new 100 MW load?

Serbia's procedure shows why a single regional comparison is difficult. EMS prepares Connection Studies in two annual intervals, from 1 March to 30 June and from 1 September to 31 December, except for strategic partners covered by separate statutory provisions. After the study may come planning and technical documentation, permits, construction of the connection and missing infrastructure, connection approval, verification and commissioning (*EMS, Connection to the Transmission System*).

The engineering result matters as much as the procedural timetable. A site that can use existing infrastructure and a site that requires a new transformer or transmission reinforcement may both be technically connectable, but they can offer very different time-to-power.

The cost of a megawatt is not just a connection fee

Connection feasibility and time-to-power do not by themselves determine the economics of a large new electricity load. A third question is how the cost of making that capacity deliverable is divided between the project and the transmission system. Across the eight systems reviewed, the boundary differs substantially. A large consumer may pay for dedicated connection assets, a regulated capacity-based contribution, project-triggered reinforcement of the wider network, or a combination of these elements.

This makes headline connection charges difficult to compare. A published €/kW rate may cover only one component of the connection, while in another system a project may also be responsible for additional network investment identified through the connection study.

Table 3. How Are the Costs of Connecting a Large New Electricity Load Allocated?

Country	Dedicated connection / connection assets	Wider network reinforcement triggered by new load	How costs are determined	Practical reading
Albania	Customer-funded on a case-by-case basis for eligible transmission-connected customers	No clear project-level allocation rule identified in the public material reviewed	Case-by-case connection charge outside the transmission tariff methodology	Direct connection costs can fall on the customer, but the treatment of wider reinforcement is less transparent for early-stage screening
Bosnia and Herzegovina	User pays a connection fee covering defined connection components	Wider works creating technical conditions in the transmission network are financed through the transmission tariff and the fixed part of the connection fee	Approved connection price list, including a connected-capacity component	Dedicated connection costs are charged to the user, while wider network-enabling investment is partly socialized
Bulgaria	HV and MV facilities serving a single non-household customer are built at that	Investor may have to cover network-capacity reinforcement where the requested load exceeds	Regulated connection framework plus project-specific infrastructure	A large load may face both dedicated connection costs and additional network-development costs if existing

Country	Dedicated connection / connection assets	Wider network reinforcement triggered by new load	How costs are determined	Practical reading
	customer's expense	available capacity	requirements	transfer capacity is insufficient
Croatia	Connection construction and network technical-condition costs are treated as distinct components	Contribution to creating technical conditions in the network is explicitly priced	Regulated methodology; from 1 May 2026 the HV network technical-conditions component is €19/kW	Provides an unusually clear published €/kW signal for the network-capacity component, but this is not the total cost of connecting a large load
Greece	Applicant bears the full cost of system-extension works required for its connection	Additional network development beyond the defined connection-extension works should not be assumed to be included in the applicant-funded connection cost	Project-specific connection arrangements under the HETS framework	The applicant can bear substantial dedicated extension costs; these should not be confused with the cost of general transmission-system development
Montenegro	User pays a regulated transmission connection charge	The published connection charge incorporates a capacity-based contribution rather than a separately identified project-specific reinforcement bill	Published methodology using €/kW unit charges by connection voltage	Connection pricing is comparatively transparent, but the regulated charge should not be interpreted as the full cost of every possible project-specific network intervention
North Macedonia	User pays additional strengthening not included in MEPSO's investment plan	User also pays additional investments needed to strengthen the system as a result of the connection where they are outside MEPSO's investment plan	Actual costs specified through the Connection Study and connection contract	A project can bear both direct connection costs and the cost of incremental network reinforcement
Serbia	Applicant pays connection costs calculated under the regulated methodology	Connection costs include a project-related part of system-development costs caused by the connection	Operator calculation under AERS methodology, including published norms and unit costs	The framework is public, but the cost of a large transmission-connected load remains project-specific

Note: The table reflects publicly available regulatory, transmission-system and connection information reviewed by New Polis as of September 2026. “Dedicated connection” refers to infrastructure required specifically to connect the new user to the transmission system. “Wider network reinforcement” refers to additional works within the transmission system required to accommodate the new load beyond the immediate connection facilities. The allocation and calculation of connection costs are project-specific in several of the systems reviewed; published methodologies, unit charges and cost-allocation rules should therefore not be interpreted as estimates of the total cost of connecting a 100 MW project.

Sources: New Polis review of publicly available transmission-system connection rules, methodologies and regulatory decisions: Albania, [ERE, Electricity Transmission Tariff Calculation Methodology](#) and [ERE, Tariff Methodologies](#); Bosnia and Herzegovina, [SERC/DERK, Rule on Connection](#); Bulgaria, [EWRC/DKER, Energy Act](#) and [ESO, Electronic Free Capacity Map – methodology and explanation](#); Croatia, [Official Gazette of the Republic of Croatia, Decision on Unit Prices for Connection to the Electricity Network](#); Greece, [IPTO/ADMIE, Implementation of System Extension Works for Connection](#); Montenegro, [REGAGEN, Methodology for Determining the Transmission-System Connection Charge](#); North Macedonia, [ERC, Energy Law, consolidated text](#); [MEPSO, Network Code for Electricity Transmission, Official Gazette of the Republic of North Macedonia No. 4/2022](#); Serbia, [AERS, Connection Costs](#) and [AERS, Price Regulation: Questions and Answers](#)

The comparison shows that there is no single regional meaning of “connection cost.” Croatia provides a relatively clear published price signal for one network-capacity component, while North Macedonia explicitly allows project-triggered reinforcement outside the transmission operator’s investment plan to be charged to the connecting user. Bosnia and Herzegovina illustrates a different allocation, with wider works required to create technical conditions in the transmission network financed through the transmission tariff and the fixed component of the connection fee.

For an investor, this means that two locations with apparently similar headroom for a 100 MW connection may have very different project economics. The relevant question is not

only whether the grid can accommodate the load, but how much of the infrastructure required to make those 100 MW deliverable will be charged to the project.

Grid transparency as investment infrastructure

The implication is not that transmission operators should promise capacity that may disappear as network conditions change. Nor can a complex electricity system realistically be reduced to a static map of green and red substations. But there is considerable space between a guaranteed connection offer and no publicly usable indication at all.

For investors, grid transparency has four distinct dimensions: capacity visibility, which helps identify where connection may be feasible; process visibility, which explains how that feasibility will be assessed; queue visibility, which shows competing demand already entering the system; and cost visibility, which indicates how much of the infrastructure required for connection may ultimately fall on the project.

Indicative load-hosting maps, regularly updated substation headroom ranges, connection queues, expected reinforcement requirements and indicative scenarios for 50, 100 and 200 MW loads could substantially improve the first stages of investment screening. Such information would help distinguish two situations that often look identical in conventional national statistics: a location where capacity is genuinely constrained, and a location where capacity may exist but cannot be confirmed without entering a formal connection process.

Developments at EU level show that this information gap is increasingly being treated as an infrastructure issue in its own right. In May 2026, ENTSO-E and the EU DSO Entity launched Capacitypedia, a pan-European portal providing structured access to publicly available grid hosting-capacity information at transmission and distribution level. The initiative grew out of a joint task force established under the EU Action Plan for Grids and is intended to improve the visibility and comparability of capacity information published by individual system operators. It remains primarily a transparency and navigation tool rather than a source of guaranteed connection capacity: the underlying information continues to come from national system operators and varies in scope and detail (*ENTSO-E and DSO Entity launched Capacitypedia to improve access to grid hosting capacity information across Europe*).

For the Balkan markets examined in this report, however, these developments should be treated as a reference point rather than as a uniform regional solution. Bulgaria, Croatia and Greece are EU Member States, while the other five systems covered here are outside the EU. More advanced European initiatives nevertheless indicate where capacity transparency may be heading. The EU-funded TwinEU project is testing federated digital-twin applications and has identified a grid hosting-capacity map as one of its pan-European scenarios. In parallel, INSIEME is developing the Common European Energy Data Space to support secure and interoperable energy-data exchange. For Southeast Europe, the significance of these initiatives lies primarily in demonstrating how more dynamic and interoperable grid information could eventually narrow the information gap identified in this report, rather than in providing an equivalent capacity-screening tool across all eight Balkan markets today (*TwinEU — D2.2: Use Cases, Pan-European Scenarios and KPIs; INSIEME - European Energy Data Space*).

This suggests a broader definition of energy competitiveness. Installed generation, electricity prices and renewable shares remain important, but so do visibility, connection certainty and time-to-power.

The challenge is becoming more urgent as generation, storage and new electricity demand expand simultaneously. Serbia illustrates the scale of this emerging competition: in

2026, EMS said it was preparing the transmission system to integrate almost 12 GW of new renewable projects over the following six years, while major transmission projects were expected to increase interconnection capacity by around 50% by 2030 (*Serbia's grid to integrate 12 GW of renewables in next six years*). New industrial loads, renewable generation and batteries increasingly compete for the same substations, transmission corridors and system-security margins.

The question facing Balkan power systems is therefore no longer simply how much new generation they can build. It is how efficiently the grid can allocate capacity between generation, storage and new demand. Finding the missing 100 MW is only part of that challenge. Once electricity reaches the grid, the system must still be able to manage **when** that electricity is produced and when consumers need it. That leads to the next constraint: flexibility.

4. The Race for Flexibility

Finding 100 MW of grid capacity does not solve the entire problem. A power system must also be able to deliver electricity when it is needed. This distinction is becoming more important as solar and wind take a larger share of Balkan electricity generation. A system can have enough annual production, and even periods of substantial renewable surplus, while still requiring expensive conventional generation or imports several hours later. The constraint is no longer only how much electricity can be produced or transported. It is also how effectively the system can move electricity through time.

That makes flexibility the third component of energy readiness, alongside generation and grid capacity. Flexibility can come from reservoir and pumped-storage hydropower, batteries, flexible thermal generation, cross-border trade, demand response and consumers able to shift electricity use. These resources perform different functions, but address the same underlying problem: electricity production and demand do not automatically occur at the same moment. Across the Balkans, countries are entering this transition from very different starting points.

Physical flexibility, however, is only part of the picture. Just as installed generation is not the same as usable power, the presence of batteries, reservoir hydropower, flexible demand or other resources does not automatically mean that their flexibility can be fully used by the system. This also depends on whether market arrangements allow these resources to participate in balancing and other flexibility services, whether aggregation and demand response can operate in practice, and whether price signals reach participants able to adjust consumption or supply. In this sense, the relevant distinction is increasingly between flexibility that exists physically and flexibility that can actually be mobilised when the system needs it.

This distinction also has a regional dimension. Southeast European electricity systems are strongly interconnected, but physical interconnection alone does not ensure that flexibility can be used efficiently across borders. Differences in balancing arrangements, market access, aggregation rules and the implementation of regional market integration can affect how readily flexibility available in one part of the system can respond to conditions elsewhere. This paper does not attempt to compare the quality of national regulatory frameworks. The narrower point is that, from a power-system perspective, the value of flexibility depends not only on the assets that exist, but also on the mechanisms through which those assets can participate in the electricity market and system operation.

Greece: when renewable abundance becomes a system problem

Greece shows what can happen when renewable generation expands faster than the system's ability to absorb and shift it. Renewables, mainly wind and solar, supplied 46.7% of Greek electricity demand in 2025. Yet an estimated 1,867 GWh of renewable electricity was curtailed during the year, equivalent to 6.6% of total RES generation and more than twice the 899 GWh curtailed in 2024 (*The Green Tank, Trends in Electricity Production – December 2025*).

The problem is temporal as much as physical. Curtailment occurs predominantly during periods of high renewable output and insufficient demand or system capacity to absorb it. Insufficient storage means that surplus renewable electricity produced around midday cannot simply be transferred to the evening demand peak (*The Green Tank, State of Climate in Greece 2025: The Electricity Generation Sector*). Greece therefore recorded both 483 hours with near-zero or negative wholesale prices in 2025 and record gas-fired

generation of 23.3 TWh. Electricity can be abundant at one hour and require conventional generation several hours later.

For large electricity consumers, this distinction matters. Abundant renewable generation can improve electricity economics during certain hours, but data centres and continuous industrial processes require power across the day. The investment value of renewable generation therefore increasingly depends on the system's ability to store, balance and move electricity through time.

Bulgaria: storage moves from pipeline to infrastructure

Bulgaria has responded to the flexibility challenge with one of the region's most ambitious storage programmes. In April 2025, the Ministry of Energy selected 82 standalone electricity-storage projects under the RESTORE programme, representing 9,712.89 MWh of usable storage capacity ([Bulgarian Ministry of Energy, 82 projects to be financed under RESTORE, 17 April 2025](#)). A second round followed in December, when another 31 projects with more than 4,000 MWh of usable capacity were selected under RESTORE 2 ([Bulgarian Ministry of Energy, 31 projects to be financed under RESTORE 2, 17 December 2025](#)). Together, the two selections represent more than 13.7 GWh of planned usable storage capacity.

Selection for financing does not mean that capacity is operational. But by 2026, some Bulgarian projects were beginning to move from pipeline to operation. ContourGlobal commissioned a 202 MW / 500 MWh standalone battery at the Maritsa East 3 coal-power complex, using existing grid infrastructure at the site ([ContourGlobal, ContourGlobal Inaugurates 500 MWh BESS Project in Bulgaria](#)).

The project illustrates how infrastructure built for the previous energy system can acquire a new role in the next one. Existing substations, grid connections and industrial sites can become valuable assets for storage and renewable integration even as conventional generation is retired. Storage is moving from project pipeline toward grid infrastructure.

Serbia: from connection pipeline to market signal

By spring 2026, EMS had signed connection contracts for seven standalone battery projects, with combined envisaged operating power of 724 MW in injection mode and 730 MW in absorption mode. Another 24 BESS proposals were on the list of valid requests for connection studies, with individual capacities ranging from 20 MW to 200 MW and combined storage capacity of 4.54 GWh ([Serbia's EMS signs grid connection contracts for seven battery storage projects](#)).

These are not yet operating batteries. But connection contracts provide a stronger development signal than headline project announcements and make it possible to distinguish projects that have entered the formal grid process from the wider development pipeline.

The market is beginning to provide another signal. SEEPEX introduced negative pricing in May 2026 ([SEEPEX, Negative Prices Recorded on SEEPEX Markets for the First Time](#)), and barely a month later prices for delivery on 7 June remained below zero for nine consecutive hours, falling to –€45.5/MWh between 14:00 and 15:00 ([Power prices at Serbian SEEPEX exchange plunge to as low as EUR 45.5 per MWh under zero](#)).

Serbia still has much less solar capacity than Greece or Bulgaria, and cross-border electricity flows also influence individual price episodes. But negative prices make the

changing hourly value of electricity increasingly visible and strengthen the business case for storage and flexible demand.

North Macedonia: operating batteries and an enormous pipeline

North Macedonia presents perhaps the sharpest contrast between today's flexibility resources and tomorrow's project pipeline. In May 2026, EVN Macedonia commissioned a 10 MW / 20 MWh battery system at its Probištip solar power plant. The company described it as the country's largest licensed BESS at the time, with work already underway to double its size (*EVN Macedonia, EVN Macedonia commissions its first battery energy storage system*).

Against the licensed pipeline, however, this operational capacity is tiny. The Energy Community Regulatory Board reported in January 2026 that two much larger battery projects had obtained licences by the end of September 2025: 1,000 MW / 2,330 MWh and 1,600 MW / 3,728 MWh. Together, they represent approximately 2.6 GW and 6.06 GWh of licensed capacity (*Energy Community Regulatory Board, Update on the Developments of Regulatory Framework on Renewables and Flexibility in the Energy Community Contracting Parties*). That is remarkable in a country whose entire installed generation fleet is around 3.16 GW. But licensed, financed, connected and operational capacity are not equivalent.

Flexibility does not always mean batteries

Battery deployment is only one measure of flexibility. Several Balkan systems enter the transition with substantial flexibility already embedded in hydropower, interconnections or participation in integrated electricity markets. These advantages, however, come with their own constraints.

Albania already possesses a form of flexibility that solar-dominated systems have to build: hydropower. Reservoir hydro can respond to changing demand much more readily than variable solar or wind generation. But hydro dependence also creates resource risk. In the third quarter of 2025, net domestic generation fell by 31.3% year on year while gross electricity imports increased by 65.3% (*INSTAT, Balance of Electric Power, Q3 2025, p. 1*). Hydropower therefore provides flexibility, but it does not eliminate exposure to hydrological conditions.

Bosnia and Herzegovina similarly combines hydropower with strong cross-border connectivity. In 2025, it exported 5.137 TWh of electricity while importing 2.810 TWh, remaining a net exporter despite difficult hydrological conditions (*SERC/DERK, Report on Activities 2025*). Newer flexibility mechanisms, including storage, aggregation and demand-side participation, remain less developed than the physical interconnection of the system.

Montenegro's relatively small electricity system combines reservoir hydropower with strong regional interconnections and the HVDC link to Italy, giving cross-border exchange an important role in system flexibility. The country's 2025 Energy Law has also established a regulatory basis for storage and aggregation, including provisions preventing double network charging for storage. Implementation, however, remains at an early stage: the Energy Community Regulatory Board reported that no aggregator licences had yet been issued and operational flexibility mechanisms were still awaiting secondary rules (*Energy Community Regulatory Board, Update on the Developments of Regulatory Framework on Renewables and Flexibility in the Energy Community Contracting Parties*).

In Croatia, flexibility is also receiving a clear market signal. Within the EU electricity-market framework, repeated periods of negative day-ahead prices already create a direct commercial incentive for storage and demand response. CROPEX reported a 2025 annual

day-ahead baseload average of €102.75/MWh, while the year's minimum day-ahead price fell to –€151.04/MWh (CROPEX, *Annual Report 2025*).

The comparison points to a simple hierarchy. A system needs sufficient generation, enough network capacity to deliver electricity to new users, and enough flexibility to reconcile the timing of generation with demand. Failure at any one stage can reduce the economic value of success at the others. A gigawatt of solar has limited additional system value if a growing share of its production must be curtailed. A battery pipeline provides no operational flexibility until projects are connected and commissioned. And even a highly interconnected system remains exposed if neighbouring markets are simultaneously tight.

This is why energy competitiveness cannot be measured by installed megawatts alone. The more useful question is becoming: how much reliable, connectable and flexible power can a system make available to the next major electricity consumer? Flexibility, in this context, matters not only when it exists as an asset, but when it can actually be mobilised through the market and system operation.

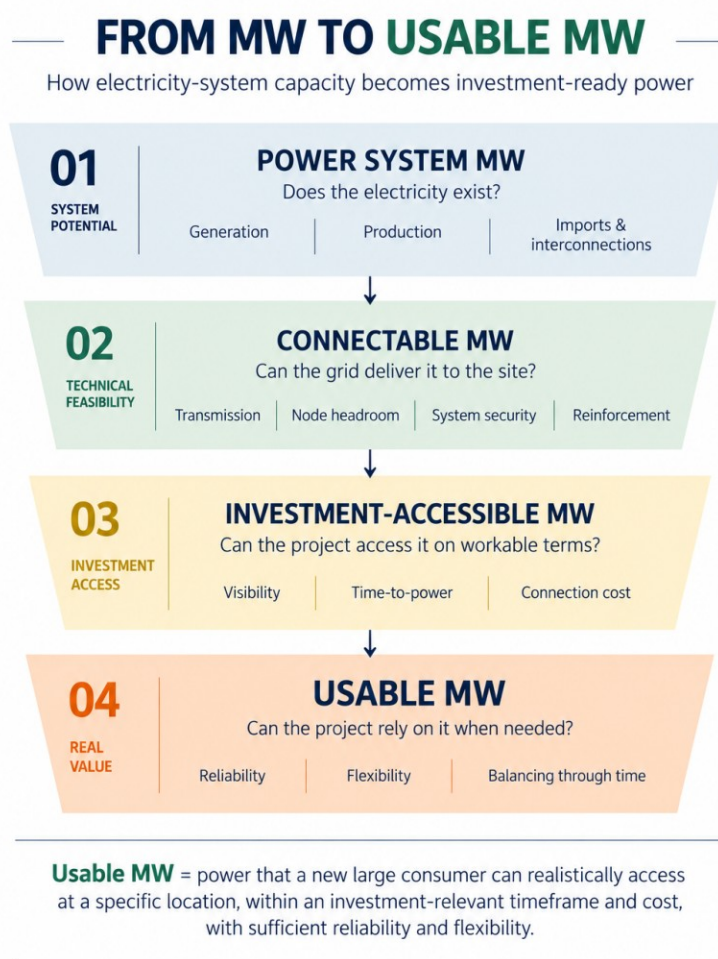
For investors, generation, grid capacity and flexibility increasingly have to be considered together. Generation determines whether electricity exists. The grid determines whether it can reach the site. Flexibility determines whether the system can provide it when it is needed.

Conclusion: From Energy Capacity to Energy Competitiveness

The comparison of eight Balkan electricity systems points to a simple conclusion: installed capacity is becoming an increasingly incomplete measure of energy competitiveness. For a new industrial facility, data centre or other large electricity consumer, the decisive question is not how many megawatts exist in the national power system, but how many can actually be delivered to a specific site, within a workable timeframe and cost, and supplied reliably when they are needed.

This paper describes those megawatts as usable MW. The term is not a new technical category of electricity capacity, but an investor-oriented analytical lens: the power that a new large consumer can realistically access at a specific location, within an investment-relevant timeframe and cost, with sufficient reliability and flexibility.

Figure 1. From MW to Usable MW: How Electricity-System Capacity Becomes Investment-Ready Power



**It is not how many megawatts a system has.
It is how many a new investor can actually use.**

Source: New Polis and E3 International analysis.

The eight Balkan systems face these challenges under very different conditions. Some are adding renewable generation faster than grids and flexibility can absorb it. Others benefit from hydropower and strong interconnections but remain exposed to hydrological conditions or regional market constraints. Storage is expanding rapidly in parts of the region, yet the analysis also shows why announced, licensed, financed, connected and operational capacity should not be treated as equivalent.

For investors, these differences matter as much as headline electricity supply. Two countries may report similar generation capacity while offering very different conditions for the same 100 MW project. Even within one electricity system, two locations can differ sharply in grid headroom, reinforcement requirements, connection time and cost.

The next phase of energy competition in the Balkans will therefore be shaped not only by who builds the most generation, but by which systems can make that power accessible to new demand. Their competitive advantage will increasingly depend not only on how many megawatts they can report, but on how many they can make usable for the next major consumer, and how clearly and predictably that capacity can be identified before an investment decision is made.