

Navigating European VPP Regulatory Hurdles: A Guide to Accelerating Market Entry and Ensuring Compliance



I. Executive Summary

The European energy market presents a significant opportunity for Virtual Power Plant providers, but it is also a complex and fragmented landscape. VPP providers seeking to expand often face a labyrinth of country-specific protocols, legacy systems, and varying regulations that can cause costly delays and hinder growth. The market is now at a pivotal moment, with solar becoming the EU's largest electricity source for the first time in June 2025, yet simultaneously facing its first market contraction in nearly a decade. This whitepaper outlines these key challenges and presents a strategic approach to overcome them. It details how a specialized engineering partnership can help VPP companies build robust, compliant platforms, ensuring a 2-3x faster time to market and a competitive advantage.

II. The Fragmented European Energy Market Landscape

The European Union's push for a unified energy market, driven by the Electricity Market Design (EMD) reform, entered into force on July 16, 2024, with a member state transposition deadline of January 17, 2025. However, the reality for VPPs is a varied and often conflicting national-level implementation.

✓ Germany

The country has traditionally had a single and uniform bidding zone, which has ensured equal access to the grids and equal conditions for electricity producers and consumers. This uniformity is a key characteristic of the German market.

✓ Spain

Spain's regulatory framework for VPPs has been significantly boosted by Royal Decree RD 244/2019. This decree eliminated many limitations on electric "self-consumption"; paving the way for the creation of VPPs in the country. The integration of self-consumption with surplus into the Spanish grid is seen as a key driver for VPP development.

✓ France

Regulations in France have historically centered on the VPP system implemented by EDF, which was designed to promote competition in the wholesale market. The French regulator (CRE) has been involved in public consultations to evolve the system, for example, by introducing products with longer durations and ensuring anonymity for VPP buyers in auctions to prevent market manipulation. This shows a focus on specific market mechanisms to ensure fair competition.

✓ The UK

Although no longer part of the EU, the UK market offers insights into VPPs, especially regarding household participation and EV charging. Recent developments include VPPs launched by companies like EDF and Hypervolt that focus on using EV chargers for frequency response services, a clear indication of market-specific applications.



Poland

Poland's regulatory framework for VPPs is still developing. While a significant reform of the grid connection process was proposed on March 12, 2025, to align with EU directives, the legal framework for VPPs as a technology is not yet fully regulated. The rules must be drawn from provisions on "virtual prosumers"; which have limitations, as a virtual prosumer must produce energy solely for its own needs and not as its primary economic activity. Additionally, Poland is moving to a dynamic tariff system based on hourly electricity prices, which requires more flexible energy management.



Romania

Romania has recently undergone a major reform of its grid connection rules, with new regulations taking effect in June 2025. The new framework, formalized by the National Energy Regulatory Authority (ANRE), imposes stricter technical, financial, and procedural requirements on developers, prioritizing mature projects and discouraging speculative ones. All new connections must now include Operational Limitations, which allow for curtailment of production during grid congestion.



Bulgaria

The Bulgarian energy sector is also in a period of transition, with a focus on increasing renewable energy. A new Regulation No. 6 on the connection of energy facilities was promulgated in April 2024, aiming to reduce the administrative burden for connecting energy consumption, production, and storage facilities. This regulation also facilitates the connection of small-scale renewable installations.

III. The Technical Hurdles to VPP Market Expansion

Beyond the regulatory patchwork, VPPs face a series of complex technical challenges that hinder scalable expansion across Europe:

Challenge 1: Country-Specific Protocols and Legacy Systems

The Problem

VPPs are often required to integrate with different legacy systems and protocols of each country's TSO. These systems are not standardized, making a single, cross-border integration a technical impossibility. For instance, a system built for the Spanish market's technical requirements may not be compatible with the German system.



The Impact

This forces VPP providers to dedicate significant engineering resources to building and maintaining bespoke middleware layers for each country, leading to increased costs and lengthy market entry delays.

Challenge 2: The Interoperability Maze

The Problem

The need to comply with a variety of standards, including OpenADR 2.0b, CTA-2045, and IEEE 2030.5, remains a significant hurdle. While the recent submission of the EU Network Code on demand-side flexibility is a positive step toward standardization, its implementation will still require technical expertise to adapt and comply.

→ The Impact

Implementing these protocols correctly is a time-consuming process. The majority of VPP teams lack the internal knowledge to do this, leading to months of trial-and-error and potential non-compliance.

Challenge 3: Uncertainty of Renewable Energy Resources

The Problem

A surge in midday solar generation is driving down the market value of solar electricity, a phenomenon known as price cannibalisation. For example, in June 2025, solar capture rates in Germany fell to an all-time low of 31%. This unpredictability affects grid safety, stability, and economic performance, requiring advanced control and orchestration logic within the VPP platform.

→ The Impact

The accuracy of renewable resource forecasting is still not satisfactory, with errors of around 20% to 30%. This unpredictability can affect grid safety, stability, and economic performance, requiring advanced control and orchestration logic within the VPP platform.

Challenge 4: Market Price Volatility and Risk Management

The Problem

European power markets are entering “uncharted territory”; with increasing volatility driven by fluctuating gas and CO2 prices and the intermittency of renewables. This creates uncertainty for VPPs as they participate in wholesale markets.

→ The Impact

VPPs need best-in-class risk management models to handle market-price risks and the non-linear volume or shape risks of day-ahead and intraday power markets. Without robust, real-time data processing and control, VPPs risk significant losses.



IV. Building a Path to Seamless Integration

Overcoming the technical and regulatory hurdles of the European VPP market requires a strategic approach that combines deep technical expertise with a focus on scalable solutions. Rather than attempting to build all the necessary expertise in-house, VPP providers can partner with specialized engineering firms to accelerate their development and market entry.

Custom Middleware for Market Integration

- ✓ A key solution is to develop robust middleware layers and bid/dispatch pipelines that are compatible with various TSO protocols, such as Durom. This approach helps to bridge legacy systems with modern, cloud-native applications, providing a standardized pathway for market access.
- ✓ This enables providers to achieve production-ready integrations and automated capacity and energy bidding, with full traceability, leading to a 2–3x faster time to market.

Accelerators for Protocol Compliance

- ✓ For interoperability standards like OpenADR, partnering with an expert firm can provide access to certified accelerator packages. This can help VPP providers achieve compliance in a matter of months, reducing typical development cycles by up to 70%
- ✓ Such a partnership ensures that engineers are fluent in implementing and testing for protocols like OpenADR, IEEE 2030.5, and other DR standards, allowing for the integration of certified modules and full compliance from the outset.

Building a High-Performance, Data-Driven Platform

- ✓ Beyond simply meeting compliance, a successful VPP platform must be able to handle massive data streams and execute complex logic in real-time. Solutions should be designed to process over 1,000 requests per second and handle billions of data points, ensuring the system can scale with a growing market.
- ✓ This requires a platform that leverages AI and machine learning for predictive energy analytics, load forecasting, and automated dispatch logic. The ability to turn energy data into actionable insights for grid services and performance optimization is crucial for maximizing value in new markets. The rapid scaling of battery storage, with the EU fleet projected to grow by over 50% in 2025, highlights the urgent need for VPPs that can manage this increased system flexibility and capture its full value.

V. Overcoming Regulatory and Technical Hurdles: Key Takeaways

Navigating the fragmented European VPP market requires more than just meeting a single regulatory standard; it demands a proactive, strategic approach to technical integration and compliance. This whitepaper has outlined the key hurdles, from country-specific TSO protocols to interoperability standards and market volatility, that can significantly delay market entry and hinder growth.

The solution lies in leveraging specialized engineering expertise to build custom middleware for seamless market integration, using certified accelerators for rapid compliance, and developing high-performance, data-driven platforms that can handle the complexity of modern grids.

Don't let these challenges be a barrier to your growth. Codibly provides the expert engineering partnership you need to expand with speed and confidence. Contact us today to discuss your market entry and compliance challenges.

Next Steps: Discuss your strategic approach to the European VPP market.

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