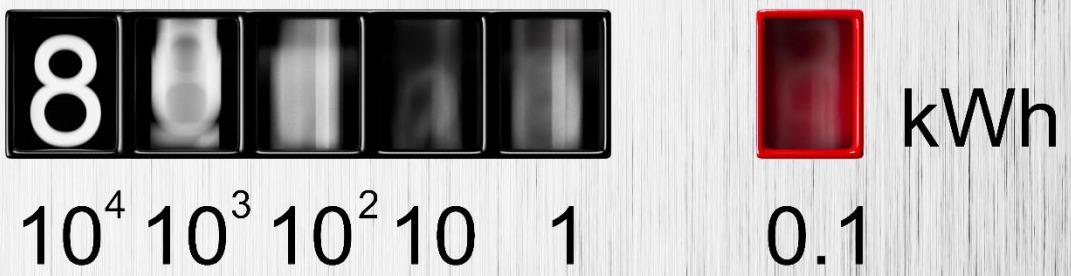
ACER

European Union Agency for the Cooperation of Energy Regulators

Report on the impact of developing peak-shaving products on the Union electricity market under normal market circumstances

10 July 2025



Report on the impact of developing peak-shaving products on the Union electricity market under normal market circumstances

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1. Introduction

1.1. Legal background

1 On the path to a carbon-free European Union (EU), Regulation (EU) 2024/1747 of the European Parliament and of the Council of 13 June 2024, which amended Regulation (EU) 2019/942 (hereinafter the 'ACER Regulation) and Regulation (EU) 2019/943 (hereinafter the 'Electricity Regulation'), and Directive (EU) 2024/1711 of the European Parliament and of the Council of 13 June 2024, which amended Directive (EU) 2018/2001 and Directive (EU) 2019/944 (hereinafter the 'Electricity Directive'), aim to improve the Union's electricity market design (EMD) and to provide EU consumers with more stable energy prices and reduced dependence on fossil fuels.

2 A key priority of the EMD reform is to ensure the efficient integration of electricity generated from variable renewable energy sources and to reduce the need for fossil-fuel based electricity generation in situations of regional or Union-wide electricity price crisis. In this context, the EMD introduces the possibility for Member States, where a regional or Union-wide electricity price crisis is declared by the Council[1], to request system operators to propose the procurement of peak-shaving products in order to achieve a reduction of electricity demand during peak hours[2].

3 The ACER Regulation and the Electricity Regulation assign new responsibilities to the European Union Agency for the Cooperation of Energy Regulators (hereinafter 'ACER') with regards to peak-shaving products[3]. Specifically, Article 15(4) of the ACER Regulation states that:

'ACER shall issue a report on the impact of using peak-shaving products on the Union electricity market during a crisis following the assessment pursuant to Article 7a(7) of Regulation (EU) 2019/943 and a report on the impact of developing peak-shaving products on the Union electricity market under normal market circumstances following the assessment pursuant to Article 7a(8) of that Regulation'

Furthermore, Article 7a(8) of the Electricity Regulation sets out that:

'By 30 June 2025, ACER shall, after consulting stakeholders, assess the impact of developing peak-shaving products on the Union electricity market under normal market circumstances. That assessment shall take into account the need for peak-shaving products not to unduly distort the functioning of the electricity markets, and not to cause a redirection of demand response services towards peak-shaving products. On the basis of that assessment, the Commission may submit a legislative proposal to amend this Regulation in order to introduce peak-shaving products outside regional or Union-wide electricity price crisis situations.'

1.2. Objective and scope

4 This report evaluates and assesses the potential impact of introducing peak-shaving products into the European Union electricity market under normal market circumstances. It outlines the key design features of the peak-shaving product and analyses its effectiveness in limiting excessive infra-marginal rents and supporting the development of additional demand response. At the same time, the report considers potential inefficiencies, including impacts on socio-economic welfare, cross-border market competition, and investment incentives. Finally, the report reviews alternative approaches to mitigating infra-marginal rents and provides recommendations for the potential use of peak-shaving products during periods of electricity price crises.

[1] Article 66a (1) of the Electricity Directive
[2] Article 7a (1) of the Electricity Regulation
[3] Article 7a (8) of the Electricity Regulation

5 The report takes into account feedback from a dedicated expert group and a stakeholder consultation to ensure that the analysis considers a broad range of perspectives and practical insights from electricity market participants.

1.3. Procedure

6 Between 20 March and 17 April 2025, ACER launched a public consultation to collect feedback from stakeholders on the impact of peak-shaving products (see Section 2 and 3.2).

7 The AEWG was consulted between 13 and 17 June 2025, and provided its advice on 17 June 2025, endorsing the draft ACER report on the need for peak-shaving products under normal market circumstances.

8 On 9 July 2025, ACER's BoR issued a favourable opinion pursuant to Article 22(5)(a) of Regulation (EU) 2019/942.

2. Stakeholder consultation process

2.1. Consultation channels

9 In order to accurately assess the potential impact of introducing peak-shaving products into the EU electricity market under normal market circumstances, ACER engaged a broad range of stakeholders through two key consultation channels: an expert group and a public consultation.

10 ACER would like to express its gratitude to all those who participated in the expert group and public consultation and shared their valuable insights.

2.1.1. The expert group on peak-shaving products

11 ACER launched the call for applications to form an expert group on peak-shaving products on 17 December 2024, with the application period open until 20 January 2025. During this time, ACER received 23 submissions from individuals with relevant expertise in the electricity sector.

12 After reviewing each submission based on the candidates' backgrounds, experiences, and the need for diversity, ACER selected 13 members for the expert group. The expert group comprises a diverse array of professionals with expertise in legal, financial, and technical fields related to energy regulation, particularly in electricity markets.

13 The expert group was tasked with advising ACER on the feasibility, benefits, and potential drawbacks of introducing peak-shaving products under normal market circumstances. Their role included assessing possible market distortions, implications for demand response mechanisms, and alignment with broader EU energy objectives.

14 The expert group convened its first meeting on 20 February 2025, followed by a meeting on 17 March 2025.[4] The input from these meetings helped shape ACER's assessment of the potential impact of peak-shaving products under normal market circumstances.

2.1.2. Public consultation

15 On 20 March 2025, ACER launched a public consultation[5] (Consultation code: PC_2025_E_02) to collect feedback from a broader stakeholder base. ACER received 43 submissions from diverse stakeholders, capturing a broad range of perspectives and feedback.

2.2. Diversity of the participants of the consultation process

16 The two consultation channels attracted a diverse group of participants, including legal service providers, energy traders, utility companies, project developers, off-takers, transmission and distribution system operators, and portfolio managers. Responses were received from organisations based in 14 EU Member States and one non-EU country, ensuring a geographically balanced representation. This wide participation underscores the relevance of the topic and the success of ACER's engagement strategy in capturing a broad range of perspectives.

[4] For more detailed information, including a comprehensive list of selected experts and the minutes from the meetings, please visit the webpage dedicated to ACER's Expert Group on Peak-Shaving Products.
[5] For more information on the Public Consultation process and to access the survey questionnaire, please visit the webpage dedicated to it.

2.3. Stakeholder feedback analysis

2.3.1. Expert group feedback

17 A summary of the expert group's general feedback is provided in Section 3.2, while detailed input is available in the meeting minutes (link in Annex II).

2.3.2. Public consultation

18 A summary of the public consultation's general feedback is provided in Section 3.2, while detailed input is available in public consultation evaluation report (link in Annex II).

3. ACER's assessment

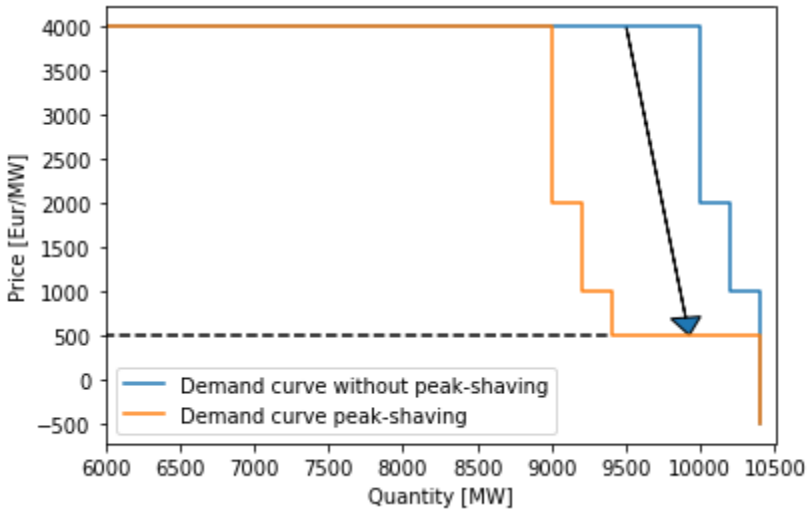
3.1. Principles of a peak-shaving product

19 This section outlines the core principles, operational framework, and implementation variants of the peak-shaving product, in line with the provisions set out in Article 7a of the Electricity Regulation.

3.1.1. Concept and economic rationale

20 The principle underlying a peak-shaving product is to provide a subsidy to demand response units to reduce consumption below their baseline consumption, even when the day-ahead market price remains below their valuation (willingness to pay). In practical terms, this implies that demand response units either submit bids in the day-ahead market at prices lower than their true valuation or reduce the volume of their demand bids. This effect is illustrated in Figure 1, where 1000 MW of demand response capacity is subsidised to bid at 500 EUR/MWh (on the orange curve) instead of reflecting its true valuation of 4000 EUR/MWh (on the blue curve).

Figure 1: Effect of the peak-shaving product on the day-ahead demand curve.



3.1.2. Operational process and timing

21 The operational steps of the mechanism follow the requirements set out in Article 7a(4) of the Electricity Regulation and are illustrated in Figure 2.

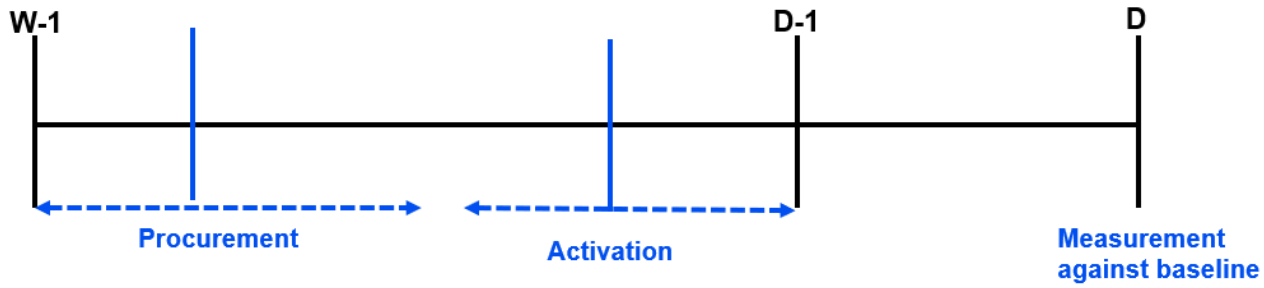
22 **Procurement step**: In this step, market participants submit bids to offer the capacity of their demand response units for the peak-shaving product. The TSO then clears the procurement process and remunerates the selected participants for their available capacity. In line with Article 7a(4)(f) of the Electricity Regulation, this procurement may take place no earlier than one week before the delivery period. Participants whose bids are accepted commit to reducing their consumption upon an activation by the TSO.

23 **Activation step**: In this step, the TSO activates a specified volume of the contracted peak-shaving product. The activated demand response units are required to reduce their consumption by the corresponding volume below their baseline consumption. This obligation to limit consumption is what drives the participating units to adjust their bids in the day-ahead market, either by submitting prices below their true valuation or by reducing their bid volumes, in order to

reflect their commitment. This activation step follows the procurement step and, as specified in Article 7a(4)(g) of the Electricity Regulation, must be executed before or within the day-ahead market timeframe.

24 **Control step**: The final step involves the TSO verifying the effective delivery of demand reduction by comparing the actual consumption of the demand response unit to its baseline consumption.

Figure 2: Timeline of a peak-shaving product



3.1.3. Peak-shaving product variants

25 Some design elements of the peak-shaving product remain open to implementation. These include how the product is activated and the specific method of remuneration. These choices, while procedural, do not change the fundamental impact of the peak-shaving product, which is to incentivise demand response to submit bids below their true valuation in the day-ahead market. For this reason, the main body of this report focuses on the general impact of the peak-shaving product, which applies across all design variants, while Annex III discusses the implications of specific design features.

3.2. Stakeholder feedback

26 Expert feedback suggested a broadly negative view regarding the use of peak-shaving products under normal market circumstances. While experts acknowledged the potential for such products to temporarily lower wholesale electricity prices by influencing day-ahead demand, as discussed in Section 3.1, they emphasised that this would not necessarily result in lower costs for end consumers. This is due to the significant procurement costs, which would ultimately be passed on via network tariffs. Experts also raised concerns about the distortion of market signals from artificially reduced day-ahead prices, which could undermine investment incentives for demand response and increase reliance on further subsidies. Additionally, they noted that introducing peak-shaving products in one Member State could affect prices and dispatch in neighbouring countries, potentially distorting cross-border competition.

27 Public consultation responses were widely aligned with the views expressed by experts. Most stakeholders considered that peak-shaving products should not be used under normal market circumstances, pointing to the risk of distorting price signals, weakening investment incentives, and increasing system costs. Several noted that such interventions could lead to inefficient dispatch outcomes and a reduction in overall economic surplus. Stakeholders also flagged concerns about cross-border distortions and market fragmentation if peak-shaving products were implemented inconsistently across Member States. Overall, stakeholders favoured targeted improvements to existing mechanisms and recommended reserving peak-shaving products for exceptional situations where other tools prove insufficient. These targeted improvements included lowering barriers to demand response participation, using reliability options and two-sided contracts for difference to address excessive windfall profits, and relying on targeted support measures for vulnerable consumers and industry.

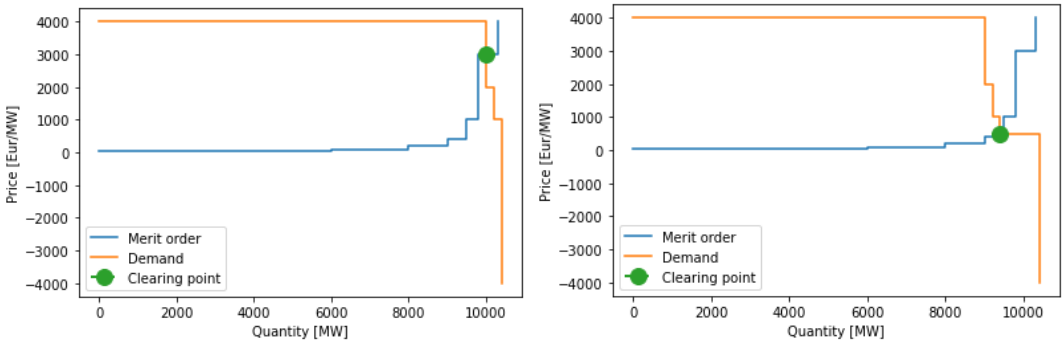
3.3. Impacts of peak-shaving products

28 This section examines how the introduction of a peak-shaving product may affect key aspects of electricity markets, including prices, investment signals, demand response participation, and cross-border dynamics.

3.3.1. Preventing windfall profits through lower day-ahead prices

29 The introduction of a peak-shaving product would modify the day-ahead demand curve, as illustrated in Figure 1, and thereby affects market outcomes. The influence on the clearing in the case with and without peak-shaving product is illustrated in Figure 3. It can be observed that the peak-shaving product reduces the day-ahead price. Graphically, this is reflected by the modified demand curve (right graph) lying below the initial demand curve (left graph), resulting in an intersection with the supply curve at a lower price point.

Figure 3: Day-ahead market clearing without (left) and with (right) the peak-shaving product.

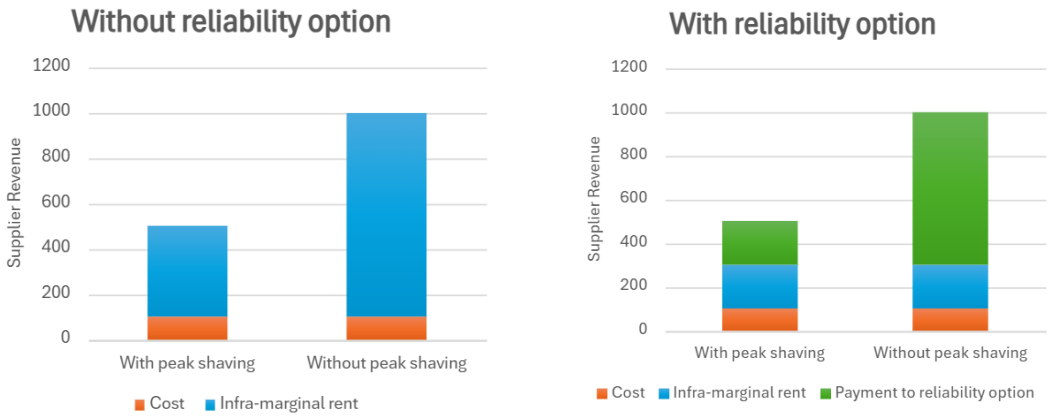


Impact on generators

30 By lowering wholesale electricity prices, the peak-shaving product reduces revenues for electricity generators not benefiting from public support mechanisms, as illustrated in the left panel of Figure 4. While this may help to limit windfall profits during prolonged periods of high prices, it also reduces infra-marginal rents under normal market circumstances. These infra-marginal rents may be necessary for covering fixed costs and recovering long-term investments for generation assets not receiving public support.

31 For generation assets supported through subsidy mechanisms that include a profit clawback provision, such as capacity mechanisms with reliability options or two-sided Contracts for Difference, the peak-shaving product has a neutral impact. These mechanisms already require the return of revenues earned above a predefined strike price. As a result, lower day-ahead prices do not affect the net revenues of supported generators, since any additional profits would have been reimbursed in any case. This effect is illustrated in the right panel of Figure 4, where it can be observed that the infra-marginal rent retained by the producer (represented by the blue bar) remains unchanged with or without the activation of the peak-shaving product.

Figure 4: Impact of the peak-shaving product on a generator without public support (left panel) and on a generator receiving public support (right panel).



Value transfer to consumers

32 By lowering wholesale electricity prices, the peak-shaving product transfers part of the market surplus from producers to consumers, which can help reduce the energy component of consumer bills. The total value transferred can be approximated by multiplying the price reduction by the volume of generation assets not covered by a clawback mechanism. Therefore, the extent of potential cost savings, in the short-term, depends largely on the share of assets not subject to such clawback provisions.

33 However, the implementation of a peak-shaving product also creates new costs related to the procurement and, where applicable, the activation of demand response units. These costs are typically recovered by the TSO and passed on to consumers through network tariffs or other regulated charges. Therefore, the net benefit to consumers is given by the difference between the cost reduction due to the impact on the day-ahead price and the procurement and activation costs of the peak-shaving product.

34 The 2024 CEER-ACER Retail Monitoring Report emphasised the importance of implementing balanced and well-targeted measures to protect vulnerable consumers. In this context, reducing wholesale electricity prices through a peak-shaving product does not constitute a targeted intervention. The support is provided uniformly, irrespective of individual consumer needs or vulnerability, and therefore does not align with the principle of targeted consumer protection.

3.3.2. Impact on long-term investment signals

35 Beyond short-term impacts on prices and welfare distribution, the introduction of a peak-shaving product also affects long-term market dynamics and investment incentives. By lowering wholesale electricity prices, the peak-shaving product would reduce revenues for generators and flexibility providers, thereby weakening investment signals for new assets and increasing the risk of early retirement of existing plants[6]. This could lead to long-term adequacy concerns and a higher likelihood of scarcity events, potentially triggering extreme price spikes in the future. In essence, although the peak-shaving product may deliver immediate consumer benefits by transferring surplus from generators, it may also discourage future investment if market participants anticipate that demand will be persistently and artificially suppressed. Consequently, generators may reduce capacity investments or accelerate plant closures in an attempt to re-establish a long-term market equilibrium. These concerns are particularly significant in Member

[6] This effect on the investment signal is not directly proportional to the expected reduction in revenues, as investors are risk-averse and tend to apply a discount to uncertain or volatile future revenues.

States without a capacity mechanism. In contrast, where such mechanisms exist, market participants would be remunerated through capacity payments, thereby offsetting the impact.

3.3.3. Impact on demand response

Development of additional demand response

36 The first way to increase the participation of demand response is to reduce the barriers that currently prevent it from entering electricity markets. Several such barriers have been identified in ACER's Report on barriers to demand-side flexibility[7] and in ACER's Report on no-regret actions to remove barriers to demand response[8]. The proposed Demand Response Network Code[9] aims to address these challenges and facilitate broader market access for demand response units in the wholesale electricity markets. When compared to wholesale electricity markets, peak-shaving products are not expected to offer lower entry barriers, as they involve remuneration for the procured capacity of demand response units. In general, mechanisms that provide capacity remuneration, such as balancing capacity and capacity mechanisms, tend to impose more stringent requirements, including prequalification procedures and performance verification processes.

37 The second way to increase the participation of demand response is by improving the business case for its developers, if the barriers still hinder their broad participation. A peak-shaving product can support this by offering remuneration for the procured capacity of the demand response unit, thereby providing an additional revenue stream. This financial incentive can make participation economically viable for demand response units that are not currently profitable under existing wholesale market conditions, due to remaining barriers. As a result, peak-shaving products may lead to increased participation from demand response units that would otherwise not be profitable.

Impact on existing demand response

38 As explained in section 3.3.1, the introduction of a peak-shaving product could lower wholesale electricity prices, thereby reducing the financial incentives for demand response to participate in wholesale electricity markets. This price reduction could result in an increased reliance on subsidies for demand response units, as the wholesale market may no longer provide adequate profitability.

39 At the same time, it is likely that demand response units currently participating in wholesale electricity markets would, in the future, seek to participate in the peak-shaving product. If the demand response, which is currently unprofitable in the wholesale electricity markets, becomes financially viable due to the peak-shaving product, this could offer a more attractive revenue stream for existing units as well. Furthermore, even if demand response units are not selected in the procurement auction for the peak-shaving product, they would still retain the ability to participate in the day-ahead market, meaning they would not lose any market opportunities by offering their capacity to the peak-shaving product.

3.3.4. Economic surplus implications

40 By subsidising demand response to curtail consumption even when the price is below the consumer's true valuation, the introduction of a peak-shaving product may lead to a loss of economic surplus. This occurs because demand that would have been willing to pay above the day-ahead price is prevented from consuming. As a result, economic surplus is reduced, as consumers who would have found it economically beneficial to purchase at the prevailing price are unable to do so. This suggests that the potential reduction in the day-ahead price is not driven

[7] ACER MMR 2023: Barriers to demand response
[8] Unlocking flexibility: No-regret actions to remove barriers to demand response
[9] ACER Recommendation 01/2025 - Demand Response Network Code

by a decrease in costs for consumers, but rather by a redistribution of surplus from generators to consumers.

3.3.5. Cross-border market distortions

41 In a cross-border context, demand response supported by a peak-shaving product in one Member State may submit bids below its true valuation. As a result, it could be dispatched (i.e. instructed not to consume) ahead of a more cost-efficient demand response unit located in another Member State. This creates a distortion in competition, leading to an uneven playing field for demand response providers across borders. Additionally, it undermines the profitability of demand response in other Member States, thereby weakening the investment incentives in those markets.

42 Another cross-border impact of the peak-shaving product is the risk of subsidy leakage. The low-priced bids enabled by the peak-shaving product can be exported to neighbouring countries, thereby diluting its intended impact on domestic prices. Meanwhile, the full cost of the subsidy is borne exclusively by consumers in the Member State implementing the scheme. This issue is particularly relevant for smaller, well-interconnected countries, where a significant share of activations may be exported, limiting the domestic effectiveness of the measure. This phenomenon closely mirrors the dynamics observed under the Iberian subsidy mechanism[10] during the energy crisis, where electricity exports from Spain to France increased following the introduction of the measure[11].

3.3.6. Risks of gaming and incentive misalignment

43 The core obligation under a peak-shaving product is that activated demand response units must reduce their consumption, even when the day-ahead market price remains below their valuation. In such cases, it may be economically more advantageous for the market participant to purchase electricity in the day-ahead market rather than reduce consumption, thereby misaligning their financial incentives with the intended system response. If a market participant were to buy back the contracted volume in the day-ahead market (or in any subsequent market) without reducing actual consumption, it could generate profit without delivering any real demand reduction. The effectiveness of the peak-shaving product therefore critically depends on accurate baselining, as it is the only way to ensure that participants are indeed delivering the required consumption reduction

3.4. ACER's assessment conclusion

44 As explained in Section 3.3.1, a claw-back mechanism is designed to automatically recover revenues from generators when the day-ahead market price exceeds a specified threshold. For example, in a capacity mechanism with a reliability option, holders of awarded capacity are obliged to return any revenues earned above a predefined strike price. The broader the application of claw-back mechanisms across generating assets, the less consumers are exposed to high wholesale electricity prices. Consequently, the potential benefit of using a peak-shaving product to reduce wholesale prices diminishes. For this reason, the report considers two scenarios: one in which the majority of assets are not subject to claw-back mechanisms, and another in which most assets are covered by such mechanisms.

[10] Spanish and Portuguese MIBEL

[11] Conceptually, the Iberian mechanism and the peak-shaving product are very similar, as both aim to subsidise specific assets to enable bids below their marginal cost. The difference lies in the type of asset targeted: gas turbines in the case of the Iberian mechanism, and demand response units in the case of the peak-shaving product.

3.4.1. Member States with most assets not under claw-back mechanisms

45 The different effects of introducing a peak-shaving product in a Member State where most assets are not subject to clawback mechanisms are illustrated in Table 1.

Table 1: Impact of a peak-shaving in a Member State where most assets are not subject to clawback mechanisms

Criteria	Limit windfall profits	More demand flexibility	Investment incentives	Economic efficiency	Fair competition
Evaluation	✓✓	✓	✗	✗✗	✗✗

46 The peak-shaving product offers two main benefits. First, it could support the development of additional demand response units by providing a capacity payment. Second, it has the potential to limit excessive infra-marginal rents. The first benefit is not unique to the peak-shaving product and could also be achieved through other support mechanisms aimed at enhancing system flexibility. In contrast, the second benefit, which relates to the reduction of excessive infra-marginal rents, constitutes a more distinctive advantage. Few instruments have proven effective in addressing this issue. For example, ex-post measures such as infra-marginal rent caps have encountered challenges in identifying and recovering windfall profits, especially in situations where asset owners have hedged their positions in forward markets.

47 Despite these benefits, the peak-shaving product also presents several drawbacks. First, it may lead to a reduction in overall socioeconomic welfare by limiting consumption that would otherwise be economically justified. Second, it introduces distortions in the functioning of cross-border electricity markets by subsidising demand response in one Member State, enabling it to replace more competitive units in neighbouring countries. Third, as the support is provided uniformly across all consumers, the measure does not specifically target vulnerable consumers. Finally, by artificially suppressing market prices, the peak-shaving product may weaken investment signals that are essential for the development of new generation capacity and flexible resources. This reduction in investment incentives could increase the risk of future scarcity events, leading to more frequent price spikes.

48 The core trade-off on whether implementing a peak-shaving product, therefore, is whether the benefit of reducing excessive infra-marginal rents justifies the associated negative effects. In electricity price crisis situations, ACER recognises that addressing such rents may constitute a legitimate short-term policy objective, particularly in formally declared electricity price crises where market participants are generally expected to have already made comfortable profits. In these cases, reclaiming excess revenues is less likely to significantly affect future investment incentives. However, under normal market circumstances, ACER considers that the primary focus should be to safeguard market efficiency and maintain a level playing field across the internal electricity market. Where consumer support is deemed necessary in normal market circumstances, targeted measures for vulnerable consumers are more appropriate than untargeted interventions. This is because, in such circumstances, periods of higher prices are typically shorter in duration and therefore have a less severe impact on most consumers. Moreover, these high prices play an important economic role by encouraging demand shifting, while also supporting long-term investment in flexible resources and clean generation technologies.

3.4.2. Member States with most assets under claw-back mechanisms

49 The different effects of introducing a peak-shaving product in a Member State where most assets are subject to clawback mechanisms are illustrated in Table 2.

In Member States where the majority of assets are already subject to clawback mechanisms, the intended benefit of preventing excessive infra-marginal rents becomes redundant. These rents

are already addressed through existing instruments such as reliability options or two-sided Contracts for Difference. The only remaining benefit would be the potential support for demand response. However, this objective could be achieved through alternative support schemes that would create fewer short-term inefficiencies and have a lesser impact on cross-border competition. Consequently, ACER does not identify any significant benefit in introducing a peak-shaving product in Member States where most assets are already covered by clawback mechanisms.

Table 2: Impact of a peak-shaving in a Member State where most assets are subject to clawback mechanisms

Criteria	Limit windfall profits	More demand flexibility	Investment incentives	Economic efficiency	Fair competition
Evaluation	~	✓	✗	✗✗	✗✗

3.5. Complementary measures to electricity price crisis peak-shaving product

50 As a complement to the use of peak-shaving product in electricity price crisis situations, a range of alternative and complementary measures can be considered to address windfall profits with fewer distortions to price signals and investment incentives.

51 **Clawback mechanisms**: As highlighted by stakeholder in the public consultation, one predictable and transparent approach to preventing windfall profits is the integration of clawback mechanisms within existing support schemes. Instruments such as two-sided contracts for difference and reliability options, as explained in Sections 3.3.1 and 3.4, recover revenues earned above a predefined day-ahead strike price, thereby limiting excessive profits. A key advantage of these mechanisms is that, since they do not directly interfere with wholesale price formation, their impact on day-ahead market dispatch, long-term investment incentives and cross-border competition is more limited. Because participants know at investment time the portion of revenues they must return, these mechanisms enhance investment predictability, reduce regulatory uncertainty, and help lower the cost of capital. It could also be explored whether similar clawback provisions could apply to flexibility support schemes, to ensure that public subsidies do not lead to windfall profits. In many cases, clawback provisions end with the support scheme itself; however, it may be worth considering whether a limited clawback could continue beyond the support period to reflect the fact that the investment was made possible thanks to public funding.

52 **Non-competitive risk mitigation:** When high prices result from non-competitive behaviours, introducing side measures to artificially lower prices is generally inefficient. Instead, the correct approach to avoid these artificially high electricity prices is to address the root cause directly by targeting market participants' bidding behaviour. This is currently managed through the enforcement actions of competition authorities or under REMIT obligations. Another complementary tool could be ex-ante market power mitigation, as applied in certain electricity markets in the United States. Under normal circumstances, market participants are free to submit bids without restriction. However, in predefined situations where market conditions indicate an increased risk of market power, such as reduced cross-zonal capacity due to interconnector outages or low renewable generation, bidding restrictions are introduced. In these circumstances, participants may be subject to either a lower price limit or an obligation to bid based on a pre-agreed cost structure. Such measures would be particularly relevant for peripheral bidding zones that are less well interconnected with the core of the internal electricity market, and therefore more exposed to local market power issues.

53 **Relief valve mechanism**: Adopted in Texas and Australia, relief-valve mechanism temporarily lower the market price limit after a sustained period of generator revenues well above normal

cost recovery levels[12]. The rationale behind this approach is that if sustained high prices have already provided strong investment signals, further transfers from consumers to producers are no longer necessary to incentivise new capacity.

[12] ACER's Final Assessment of the EU Wholesale Electricity Market Design

4. ACER's recommendation and next steps

4.1. ACER's recommendation

54 Based on its assessment, ACER concludes that the drawbacks of peak-shaving products outweigh the benefits under normal market circumstances. Therefore, ACER does not recommend amending the legal framework to permit their use outside officially declared electricity price crises.

4.2. Recommendation for application in electricity price crisis

55 To support Member States considering the implementation of a peak-shaving product during an officially declared electricity price crisis, ACER has identified several key recommendations to enhance effectiveness and reduce unintended consequences.

56 **Investment predictability:** For Member States planning to implement a peak-shaving product, it is advisable to provide early and transparent information to market participants, particularly regarding the design features that would have the greatest impact on them, such as the indicative price level of the product. Doing so would improve investment predictability, reduce regulatory uncertainty, and ultimately lower the cost of capital for investors.

57 **Design preparedness:** Due to the number of open design issues (see Annex III), ACER recommends that Member States intending to implement a peak-shaving product start developing the detailed setup well ahead of any potential electricity price crisis. Developing a robust design under time pressure may prove difficult. In particular, the effectiveness of the mechanism depends heavily on an accurate and reliable baseline consumption methodology (see Section 3.3.6), which should be carefully prepared ahead of time.

58 **Geographical scope**: To minimise cross-border distortions and leakage risks (see Section 3.3.5), the implementation of peak-shaving products should be geographically coherent. This may require coordination between neighbouring Member States.

Annex I: Glossary

59 ‘Electricity market’ means electricity markets as defined in Article 2, point (9), of Directive (EU) 2019/944;

60 ‘Market participant’ means a market participant as defined in Article 2, point (25), of Regulation (EU) 2019/943;

61 ‘Regulatory authority’ means a regulatory authority as defined in Article 2, point (2), of Regulation (EU) 2019/943;

62 ‘Peak hour’ means a peak hour as defined in Article 2, point (72), of Regulation (EU) 2019/943;

63 ‘Peak-shaving’ means peak-shaving as defined in Article 2, point (73), of Regulation (EU) 2019/943;

64 ‘Peak-shaving product’ means peak-shaving product as defined in Article 2, point (74), of Regulation (EU) 2019/943;

Annex II: Stakeholder feedback

Access the minutes of the expert group meetings.

Access the evaluation of public consultation responses.

Access the public consultation responses.

Annex III: Details of the peak-shaving product

Variants of a peak-shaving product

Certain design aspects of the peak-shaving product remain open to specification. This annex identifies three key outstanding design choices (excluding the baselining methodology) and describes two illustrative variants of the product in greater detail.

1) **Activation mechanism:** There are two primary options for how the TSO may activate participating demand response units:
   (i) **Dedicated activation mechanism:** Activation is determined by the TSO through a separate mechanism prior to the day-ahead market. In this case, the TSO must rely on forecasts to determine the volume of the peak-shaving product to be activated.
   (ii) **Implicit activation based on price threshold:** Activation is automatically triggered if the day-ahead market price exceeds a predefined threshold. Participating units are activated without further intervention by the TSO.
2) **Compensation for activation**: When a demand response unit is activated, its true valuation for electricity may exceed the day-ahead market price. Without compensation, the unit may incur an economic loss from forgoing consumption. Three main approaches can be considered:
   (i) **No compensation:** Participants are expected to internalise the potential loss and reflect it in their capacity bid.
   (ii) **Fixed Compensation:** The activation compensation is set to ensure that participants recover their true valuation for electricity, avoiding economic loss from activation.
   (iii) **Market-based compensation:** Participants submit separate bids for activation compensation in a dedicated activation mechanism, allowing compensation levels to be set competitively.
3) **Activation impact on trade position**: This design choice concerns whether the activation of the peak-shaving product affects the market participant's trading position. It determines whether participants adjust their own bids compared to a scenario without a peak-shaving product, or whether the TSO intervenes directly in the day-ahead market.
   (i) **No adjustment to trading position:** Activation does not modify the participant's trading position. As a result, if the demand response unit does not consume, an imbalance arises between the participant's physical consumption and contractual market position. To avoid this, participants are incentivised to adjust their day-ahead bids—typically by reducing demand or increasing supply—to better align their trading position with their expected physical schedule.
   (ii) **Adjustment to trading position:** Activation directly modifies the participant's trading position, ensuring alignment with its actual consumption behaviour. The resulting imbalance is absorbed by the TSO, which takes on a non-zero market position and submits corresponding supply bids in the day-ahead market. This is effectively equivalent to the TSO purchasing electricity from the participant and reselling it into the day-ahead market at a lower price.

65 Figure 5 illustrates the sequence of steps involved in one specific variant of the peak-shaving product. This variant includes only a capacity payment and triggers activation based on a predefined day-ahead price threshold of €500/MWh. It also assumes no adjustment to the trading position.

- The procurement step follows the general process already described.
- Following procurement, the participating demand response unit places its bid in the day-ahead market at the threshold price rather than at its higher valuation. This bidding strategy is necessary because, if the participant were to bid at its true valuation and purchase

electricity even when the price exceeds €500/MWh, it might end up acquiring energy it is not allowed to consume due to activation by the peak-shaving product. Such a mismatch between its trading position (buying energy) and physical behaviour (not consuming) would result in an imbalance. The participant would then be forced to resell the excess electricity in the intraday or balancing markets, which are typically less liquid than the day-ahead market.

- After the day-ahead market clears, the demand response unit is deemed activated if the market clearing price exceeds the €500/MWh threshold.
- The final step involves the TSO verifying the actual reduction in consumption by comparing the unit's realised load against its baseline consumption.

Figure 5: Illustration of a first variant of the peak-shaving product

66 Figure 6 illustrates a second variant of the peak-shaving product. In this design, the product includes a capacity payment and allows free bidding for activation compensation. It also assumes that the TSO activates market participants before the day-ahead market and that there is an adjustment of the trading position.

- The procurement step follows the general process already described.
- Following procurement, the participating demand response units submit bids for the activation compensation in a separate mechanism dedicated to activating the peak-shaving product.
- Based on its forecast, the TSO determines the volume of the peak-shaving product to be activated.
- Once activated, the market participant does not change its bids in the day-ahead market, since its trading position is adjusted automatically to reflect the reduced consumption. Instead, the TSO submits supply bids corresponding to the activated volume in the day-ahead market.
- The final step involves the TSO verifying the actual reduction in consumption by comparing the unit's realised load against its baseline consumption.

Figure 6: Illustration of a second variant of the peak-shaving product