



Clean Energy Package (CEP): Compromise on Provisions for Capacity Remuneration Mechanisms

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Capacity remuneration mechanisms (CRMs) are designed to support new and existing power plants by ensuring adequate capacity and security of supply. Whereas some regards CRMs as necessary for maintaining (national) security of supply; others see them primarily as measures implemented by member states (MSs) to subsidize domestic generation, thereby undermining the IEM.

The debate on CRMs has increasingly centred on the 'missing money' problem and future resource adequacy. Current overcapacity and falling wholesale prices affect investments in new capacity – raising concerns that investments may prove insufficient to provide the back-up capacity needed to deal with intermittent supply of renewables in peak demand periods.

In 2016, the Commission proposed a new EU regulation on the use and design of CRMs as part of the CEP (addition to the Electricity Regulation). Several of the proposed provisions were heavily contested, and political agreement was reached only at the very end of the trilogue negotiations in 2018.

This REMAP Insight provides a summary of the process and an overview table of the controversial issues. The attached text gives a more detailed account of the background for the controversies, the Commission's proposal, the trilogue negotiations, and the outcome.

Common principles and rules; CRMs as a last resort

The Commission proposal was aimed at conditioning member-state use of CRMs. As a general principle, CRMs was to be a last-resort measure, with priority given to market and regulatory reform. The proposal included principles and common rules for resource adequacy assessment and reliability standards, to underpin decisions on CRMs.

Trilogue outcome

The Commission's proposal implied that MS would be granted the legal right to introduce CRMs on specific conditions, after Commission assessment and acceptance of their compatibility

with state aid rules. The Commission's proposal was retained in many aspects. Certain principles and procedures were further specified. However, the Commission's proposals were *not* adopted on the most controversial provisions:

- Strategic reserves were not adopted as the priority design for CRMs
- MS can still base the introduction of CRMs on national adequacy assessments, complementary to the European assessment
- The proposed emissions performance standard (550 gCO₂/kWh) was accepted, with the addition of a 'grandfathering' clause that protects capacity contracts concluded before 2020.

On other points, the adopted regulation is stricter than the Commission's proposal: for example, that CRMs may be approved for a maximum of 10 years.

Assessment

With the adoption of the new Electricity Regulation, clear steps have been taken towards controlling the distortions that national CRMs inflict on the IEM. Despite the heated debates, the final texts are not very different from the Commission's proposal.

In the Council, the split on CRM broadly reflected the fact that some, but not all, MSs had already implemented CRMs. The European Parliament favoured Strategic Reserves as the main option but failed to convince the Council. The most controversial issues were the emissions standard and the protection of existing capacity contracts. Here, the final text is a clear compromise between the 'coal lobby' and the 'clean power lobby'. Under the new EU rules, new plants built after entry into force of the Regulation and emitting more than 550 grCo₂/kWh cannot be remunerated by the capacity mechanisms. After June 2025, also existing plants emitting more than this level will not be granted a new capacity remuneration contract. However, the 'grandfathering' clause implies that all contracts concluded before the end of 2019 may be exempted from these rules.

Overview: Commission's proposal and outcome of trilogue on Capacity Remuneration Mechanisms

	Issue	Commission's proposal	Outcome of trilogue
<i>General principles</i>	Competence of Commission and legal rights of MSs	Legal right of MSs to introduce CRM as last-resort measure on specific conditions Commission with exclusive competence to assess compatibility with state aid rules	Added to the definition of CRMs was that they were to be a temporary measure. Article 18 added new detail on conditions: e.g. that CRMs should be a temporary measure; and that Commission can grant approval to CRMs for maximum 10 years.
<i>Recital 28 (and Article 18)</i>	Assessment of regulatory distortions	MSs required to assess regulatory distortions and to prepare plans for adoption of measures to eliminate such distortions	Retained requirement that MSs prepare non-binding implementation plans for regulatory measures and to address market failures. Specification of a set of regulatory measures to be considered. MSs cannot introduce CRM until Commission has delivered its opinion on the implementation plan.
<i>Recitals 26 and 30</i>	European resource adequacy assessment	Introduction of CRM to be based on a European adequacy assessment	Major concession: MSs may complement the European assessment with a national resource adequacy assessment (albeit with regional scope). In the case of divergence between the European and national assessment, ACER is to provide an opinion to be accounted for at national level (Article 19).
<i>Article 23</i>	Principle for design of CRM	Should minimize distortion of the IEM, and be based on clear and transparent criteria regarding cross-border trade, DSR and decarbonization	Principles retained and further specified in Article 18
<i>Article 18</i>	Participation of alternative resources in CRMs	No specifications in the proposal	Clear rules for the inclusion of storage, energy efficiency and demand response in CRMs
<i>Article 19</i>	Procedures for European resource adequacy assessment	Should be based on a ten-year period, on methodology drafted by Entso-E and approved by ACER. Entso-E to provide annual updates.	Principles for developing European adequacy assessment retained.
<i>Article 19</i>	Methodology for resource adequacy assessment	Including calculation of the value of lost load and cost of new entry (including DSR); reliability standard.	Methodology, to be devised by Entso-E and approved by ACER, for calculating the value of lost load, the cost of new entry for generation or demand response, and reliability standard, see. Article 20
<i>Article 20</i>	Reliability standard	NRAs should set a reliability standard based methodology developed by Entso-E and approved by ACER	The provision re basing CRM on coherent reliability standards retained and further specified for cross-border bidding zones; the relevant authorities shall jointly establish reliability standards
<i>Article 21</i>	Cross-border participation	All CRM except Strategic Reserves should be open for direct cross-border participation in line with domestic capacity	Largely unchanged, but addition that, where technically feasible, Strategic reserves should also be open to X-border participation.
<i>Article 23</i>	Emissions standard for capacity in CRM	Emissions standard of 550 gr CO ₂ /kWh for new capacity built after entry into force of the Regulation. Pre-existing capacity to adhere to same limit for five years after entry into force	Art. 23 deleted. Final text (moved to Article 18) much like the Com proposal; addition: annual emissions may not exceed 350 kg CO ₂ per kWh on average. However, additional grandfathering clause exempts all contracts with the government finalised before the end of 2019.
<i>Article 24</i>	Compliance with existing mechanisms	Existing mechanism to be adapted to comply with Articles 18, 21 and 23.	Art. 24 deleted. Text retained, applying to all the revised articles under Chapter 4 (18–22)

Introduction

In 2016, the EU Commission proposed broad reforms of EU energy legislation (the Clean Energy Package). Included were new provisions in the Electricity Regulation (European Commission, 2017) setting out conditions for Member States' introduction of Capacity Remuneration Mechanisms (CRMs): state support to new and existing electric power plants aimed at ensuring adequate capacity and security of supply. Several Commission proposals were highly contested, resulting in changes made after trilogue with the European Parliament and the Council (Council of the European Union, 2019).

Background

Security of supply is a key dimension of EU energy policy, enshrined in **art 194(1) TFEU** as a 'shared competence' between the Member States (MSs) and the EU institutions. As a catch-all concept, 'security of supply' has often served as a convenient label for protectionist MS policies to mask an array of support measures for ailing firms. If an MS can convince the European Commission (EC) and ultimately the European courts that it is justified in taking certain actions in the interests of security of supply (for example, establishing capacity remuneration mechanisms), that line of argument will inevitably trump the EU's plans for a single European energy market. The EC's role is often reduced to fire-fighting or damage-limitation, i.e. ensuring that any national, unilateral action is as contained as possible and will not unduly undermine trade among MSs. However, this is not just a matter of single market ideology: purely national action is probably not as cost-effective as

mechanisms that allow for cross-border participation in different national markets.

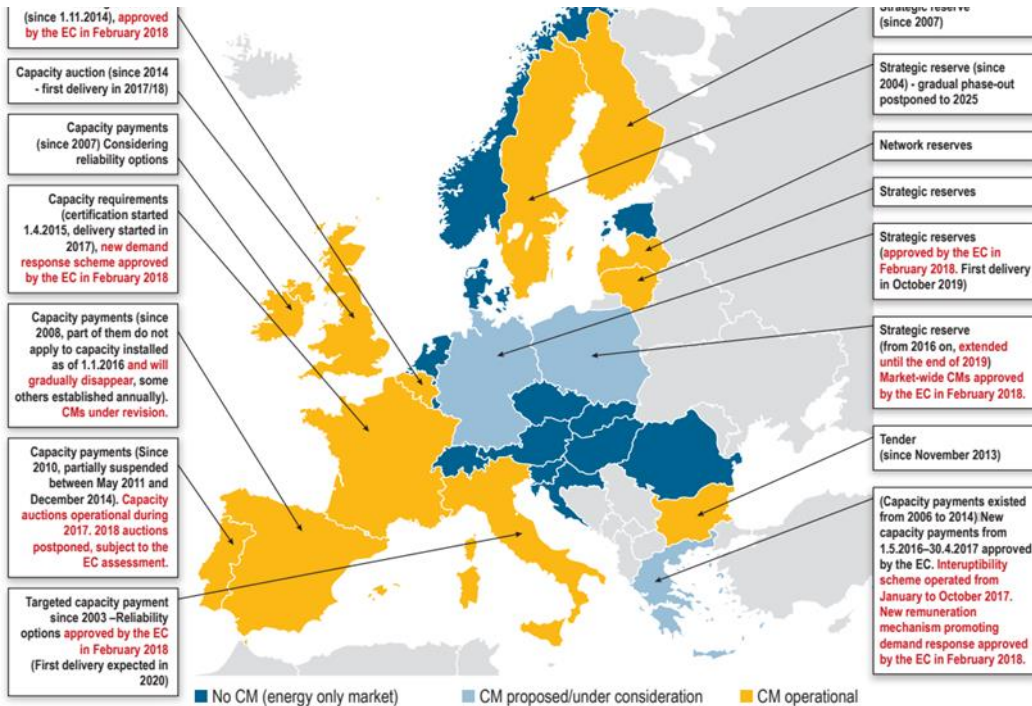
The rationale for introducing CRMs may not always seem convincing, as generation capacity in the EU has increased due to the growth of renewable energy sources (and a decrease of conventional power), while electricity demand and wholesale prices have decreased steadily since 2011. The outcome has been a situation of overcapacity in at least parts of Europe. However, the exponential growth of often heavily subsidized renewable energy production, combined with the 'energy-only' market model, has introduced a new justification for introducing CRMs: the 'missing money' problem: conventional fossil-fuel plants increasingly find themselves in financial difficulties.

Various CRMs have long existed in the MS as illustrated by Figure 1. In 2014 the EC adopted a set of guidelines outlining the main conditions it would apply in order to approve a CRM as compatible state aid. The 16 CRMs have all subsequently been reviewed and cleared under the treaty state aid rules.

April 2015, the EC launched a Sector Inquiry under the treaty state aid rule to assess the various CRMs implemented and their consequences for competition and trade in the internal energy market, adopted as associated document under the Clean Energy Package (European Commission, 2016). The inquiry found that many MSs had not adequately assessed the need or cost-effectiveness of these measures before introducing them. Some MSs had introduced three or more such mechanisms; many MSs had not applied a sufficiently rigorous assessment methodology to establish appropriate level of security of supply before applying a

CRM. The Sector Inquiry also confirmed the use of differing metrics applied across MSs to set reliability standards depending on the adequacy assessment approach adopted – although some MSs had not even defined a reliability standard when introducing capacity mechanisms. The report of the sector inquiry concluded that capacity mechanisms should be open to all types of potential capacity providers – except for pure demand-response mechanisms, given their ability to address market failures; and strategic reserves, as they are designed not to promote new

Figure 1 CM implementation in Europe (ACER and CEER, 2018:71)



generation capacity¹ (Commission, 2016).

In February 2018, during negotiations on the Clean Energy Package, the Commission (DG Competition) gave state aid approval for capacity mechanisms in six MSs: Belgium, France, Germany, Greece, Italy and Poland. The Commission found that these measures would contribute towards ensuring security of supply while preserving competition in the single market.

Typology of CRMs

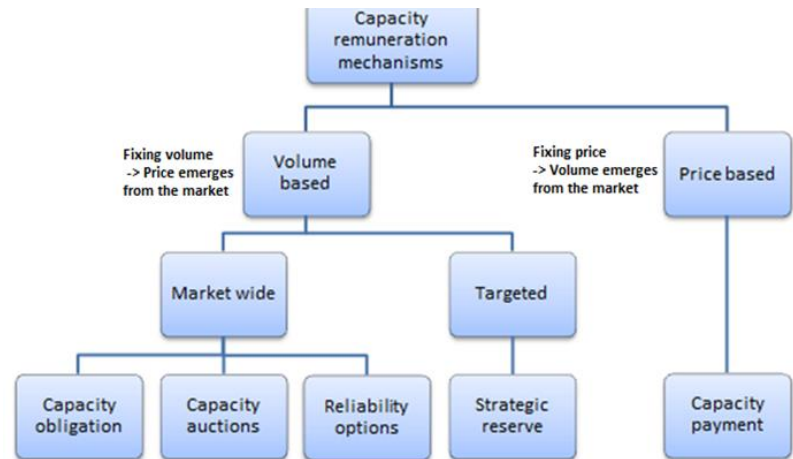
The Sector Inquiry noted that CRMs can be classified as *volume-based mechanisms* and *price-based mechanisms*; within these two main categories, CRMs may have further distinguishing characteristics. In volume-based mechanisms, the total amount of capacity required is determined in advance by policymakers or by a designated entity, usually a TSO. A market-based process is then used to establish the price to be paid. Volume-based mechanisms can then be divided into two subcategories. *Market-wide mechanisms* provide support to all market participants that are required to meet the reliability standard and in principle, reward all capacity. *Targeted mechanisms* reward only specific plants or technologies, i.e., they provide support only to the extra capacity required in addition to that provided by the market without the subsidies (Hancher et al., 2015). For price-based mechanisms, a price is administratively set, and investors decide how much volume of capacity they are willing to invest for the given price.

The 2018-approved mechanisms included strategic reserves in Belgium and Germany, two market-wide capacity mechanisms in Italy and Poland, as well as a demand response² (DR) tender in France and an interruptibility scheme in Greece.^{3,4} The Commission's approval was expressly stated as being without prejudice to the need for these measures to comply with future sectoral EU legislation when that becomes applicable. This standpoint raised important issues of legal certainty: could the EC approval be withdrawn if the measures did not comply with the new Regulation?

Summing up, the strategic reserve is the most common CRM used by EU MSs (Belgium, Finland, Germany, Poland and Sweden). Strategic reserves are viewed as the most appropriate response

to temporary adequacy concerns because they operate outside the market. If they are designed to exclude⁵ new generation and if the reserve is kept as small as possible, energy market distortions can be kept at a minimum. Nevertheless, many options have been adopted at national level and subsequently approved under the

Figure 2 Taxonomy of capacity mechanisms



treaty state aid rules given that the EC has also recognized that market-wide capacity mechanisms are likely to be more appropriate for addressing long-term adequacy concerns. These mechanisms guarantee a regular income stream, thereby boosting investment certainty.

The Commission proposal

As the Commission powers under existing treaty state aid rules are essentially reactive to MS adoption and design of CRMs, these rules could not guarantee that specific national CRMs would be compatible with internal market objectives. They could not force a MS to choose a particular category of CRMs; would not ensure that the CRM had been chosen on the basis of transparent and harmonized EU criteria for assessing the resource adequacy problem; and would not regulate terms on which to ensure cross-border participation in national schemes. Only legislation could deal with those issues (Hancher and Reichmann, 2018).

Therefore, as part of the 2016 Clean Energy Package, the Commission proposed changes to the Electricity Regulation, introducing various proposals to condition the choice of CRMs. Included were CRM design principles as well as common rules for European resource adequacy assessments and reliability standards to underpin decisions on CRMs (Chapter IV, Articles

¹ According to the EC (2016b), 'market distortions can be kept at a minimum if the reserve is kept as small as possible'. Strategic reserve is designed not to promote new generation capacity.

² DR operators can choose between certification of DR as capacity, and reduction of consumption as supplier obligation.

³ Press Release IP/18/682, http://europa.eu/rapid/press-release_IP-18-682_en.htm

⁴ 'Interruptibility schemes' are mechanisms 'in which industrial customers are asked by the network operator to reduce their demand in scarcity situations, are also considered a form of "reserve", as they provide capacity that is only activated when a supply shortfall occurs' (European Commission, 2016)

⁵ Based on Hancher and Reichman (2018)

18–24). MSs were granted legal right to introduce CRMs on specific conditions; and the exclusive competence of the Commission to assess the compatibility of any form of state support under its treaty state aid rules was explicitly stated. As a general principle, the Commission proposed that CRMs should be a solution of last resort; priority should be given to the adoption of market reforms to address resource adequacy (energy-only solutions).

As per Recital 28 and Article 18, prior to introducing capacity mechanisms, MSs should assess regulatory distortions contributing to the related resource-adequacy concern. MSs should be required to adopt measures to eliminate the identified distortions, including a timeline for implementation (Art. 18).

Recital 30 stated that the decision to introduce CRMs should be based on a European Resource Adequacy Assessment. If this assessment should reveal no adequacy concerns, no new capacity mechanism should be established and no new capacity commitments under mechanisms already in place should be made. If the assessment showed that capacity mechanisms were necessary, such mechanisms should be designed to minimise distortions to the internal market. Clear and transparent criteria for minimising distortions of cross-border trade, maximising the use of demand response, and reducing any impacts on decarbonisation should be defined, to avoid the risk of fragmented national capacity mechanisms creating new market barriers and undermining competition (European Commission, 2016, p. 5-6).

Article 19 provided principles and procedures for developing the European resource adequacy assessment. The assessment should cover a ten-year period and be based on a methodology drafted by ENTSO-E and submitted for approval by ACER. ENTSO-E should carry out annual assessments based on data to be provided by national TSOs. Important principles were outlined in §4. The European assessment should be carried out on bidding-zone level; be based on appropriate scenarios of projected demand and supply; account for the contribution of all resources (including existing and future generation, energy storage, demand response, and import/export possibilities and their contribution to flexible system operation); anticipate the likely impact of the member-state implementation plan for measures to remove regulatory distortions (Art. 18(3)); be based the flow-based approach (where applicable); apply probabilistic calculations;⁶

⁶ Adequacy assessment may follow two approaches: a deterministic approach and a probabilistic one. The deterministic approach assesses the generation adequacy level via the capacity margin, which is the relation between peak demand and the reliably available supply, as a percentage. However, due to the increase in renewable energies in electricity systems, this approach does not give a reliable picture of the adequacy situation. The probabilistic approach, in turn, considers variations in demand over the years. Generation adequacy can be measured by calculating the loss of load probability (LOLP); in many

apply at least the following indicators: 'expected energy not served', and 'loss of load expectation'; and identify the sources of possible resource adequacy. A draft methodology for calculating the value of lost load, the 'cost of new entry' for generation, or demand response, and the reliability standard expressed as 'expected energy not served' and the 'loss of load expectation' should be developed by ENTSO-E after prior consultation and submitted to ACER for approval.

According to Article 20, MSs shall base capacity mechanisms on a reliability standard, indicating their desired level of security of supply in a transparent manner to be set by the national regulatory authority based on methodology developed by ENTSO-E and approved by ACER, on similar terms as for the European adequacy assessments. Parameters determining the amount of capacity procured in the capacity mechanism were to be approved by the national regulatory authority.

Article 21 proposed measures to ensure cross-border participation in capacity mechanisms. For all mechanisms other than strategic reserves, capacity providers located in another MS had to be allowed the opportunity to compete in bidding processes for capacity contracts, in line with domestic capacity. For each bidding-zone border, new proposed Regional Operational Centres (ROCs) would annually calculate the maximum entry capacity available for foreign capacity. The MSs (national regulatory authorities) would be obliged to ensure allocation of entry capacity to eligible capacity providers in a transparent, non-discriminatory and market-based manner. Any difference in the cost of foreign capacity and domestic capacity should be shared as revenues between the relevant transmission system operators. Methodology for calculating the maximum entry capacity for cross-border participation and for sharing revenues would be developed by ENTSO-E and approved by ACER. A registry of eligible capacity providers should be developed by ENTSO-E.

Article 23 provided important design principles for CRMs. The proposed CRM should not create unnecessary market distortion or limit cross-border trade. Member states should consult electrically connected neighbouring countries on the proposed CRM. To prevent CRMs from obstructing parallel transition policies aimed at curtailing climate change, an emissions standard was proposed for generation capacity eligible for participation in a capacity mechanism: new capacity (built after the entry into force

cases, LOLP is expressed as a loss of load expectation (LOLE). Neither LOLP nor LOLE can measure the shortfall in capacity that arises when there are disconnections, and neither LOLP/LOLE nor capacity margins can measure the unmet demand. To obtain the economic value of adequacy, it is necessary to quantify the Value of Lost Load (VOLL) – this is crucial to implement a cost-effective adequacy level. The probabilistic approach is gradually replacing the deterministic one in some MSs as electricity systems become increasingly complex.

of the Electricity Regulation) emitting 550 gr CO₂/kWh or more would not be eligible for support. Five years after entry into force of the Regulation, also pre-existing capacity emitting 550 gr CO₂/kWh or more was to be removed from the CRM. This would effectively exclude coal-powered plants from participating.

Article 24 proposed that existing mechanisms applied by the MSs should adapt and comply with Articles 18, 21 and 23.

The Regulation adopted after trilogue

The Commission's proposals sparked intense debate on the role and design of CRMs and on methodologies and procedures for assessing resource adequacy and determining reliability standards. The chapter on CRM was not agreed upon until a final trilogue dedicated to it in late 2018. The final Regulation retained many of the Commission's proposals. Some were given more specific content by the addition of new provisions; others were significantly changed.

The proposed principle of capacity mechanisms as a last-resort solution was retained, but more specific details added in the form of conditions for introducing capacity mechanisms. For example, the definition of capacity mechanisms in Art2(2)(u) added that CRMs should be 'a temporary measure to ensure the achievement of the necessary level of resource adequacy by remunerating resources for their availability not including measures relating to ancillary services and congestion management.'⁷ According to Art 18a(6), capacity mechanisms 'shall be approved by the Commission for no longer than 10 years.' Also added was a provision allowing for efficient administrative phase-out of capacity mechanisms: they shall be either phased out or the amount of the committed capacities shall be reduced on the basis of the implementation plan now required by Art. 18.

The Commission proposal saw strategic reserves as the most appropriate response to temporary adequacy concerns, as they operate outside the market. The adopted Regulation gives no priority to any type of mechanism (e.g., strategic reserves) over other designs. The final text includes specific design principles for strategic reserves in a new Article **18b (2)**. Their potential is to be assessed as the first option by the MS in question. The reserve shall be dispatched only if TSOs are likely to exhaust their balancing resources. The strategic reserve's output after the dispatch shall be attributed to BRPs through the imbalance settlement mechanism. For CRMs other than strategic reserves,

the Regulation adds further specifications on design principles with regard to availability payments and capacity obligations. Notably, **Art 18b(3)** states: 'capacity obligations are to be transferrable between eligible capacity providers'.

Despite resistance from several MSs, **Art 18** retained the requirement to prepare non-binding implementation plans for removing regulatory energy market distortions as a preliminary step to assessing the necessity of CRMs. **Art 18(3)** requires that MSs 'publish an implementation plan with a timeline for adopting measures to eliminate any identified regulatory distortions and/or market failures as a part of the state aid process.' In addition, when addressing these regulatory distortions and market failures, MSs shall take into account the principles regarding the operation of electricity markets stated in **Art 3** of the Regulation. **Art 18(3)** added specificity to the set of potential regulatory measures that MSs shall also 'consider'.⁸ Objections from some MS that these conditions were complex and excessive and would not necessarily solve the core adequacy problems were finally overruled. MSs must submit their implementation plans on an annual basis to the Commission for its review and opinion, but they are not bound to take account of that opinion. However, the Regulation prohibits a MS from introducing a CRM before receiving the EC's opinion.

A major concession given to the MSs concerns how adequacy problems are to be assessed. A majority of MSs maintained that, although the development of regional and European adequacy assessments is an important step towards greater energy security and closer cooperation among MSs, they should not replace national adequacy assessments. According to the Commission's proposal, resource adequacy concerns must now be identified against common reliability standards, in line with *the European and/or the national resource adequacy assessment*.

Many principles and procedures proposed by the Commission and aimed at developing European resource adequacy assessment were retained: to be based on current and projected demands for electricity for every single year within in the Union'; to cover the relevant MSs in the region concerned, for each MS and for each bidding zone; to span a ten-year period with annual assessments to be conducted by ENTSO-E based on data provided by national TSOs and approved by ACER. MSs may complement the European assessment with a national resource adequacy assessment, introduced as an option by the Council in the trilogues. National adequacy assessments are to have a regional

⁷ That CRMs should be temporary and should not create undue market distortions is further re-stated in **Art 18a(1)**.

⁸ (a) removing regulatory distortions; (b) remove price caps in accordance with article 9; (c) introduce a shortage pricing function for balancing energy as referred in Article 44(3) of Regulation 2017/2195; (d) increase interconnection and internal grid capacity with a view to reaching at least their interconnection targets as referred in Article 4(d)(1) of the

Governance Regulation; (e) enable self-generation, energy storage, demand side measures and energy efficiency by adopting measures to eliminate any identified regulatory distortions; (f) ensure cost-efficient and market-based procurement of balancing and ancillary services; (g) remove regulated prices where required by Article 5 of the recast Directive.

scope. Their methodology is similar to the European one described in **Art. 19(4)**. They may also take account of national sensitivities by considering the specifics of national power demand and supply, and may use complementary tools and more consistent recent data than with the European methodology. If there is a divergence⁹ between the national and the European resource adequacy assessment with regard to the same bidding zone, ACER shall provide an opinion on whether the discrepancies are justified. Although not binding, ACER's opinion shall be taken into account by the body governing the national assessment; where necessary, that body shall amend the final assessment.

The principle of avoiding discrimination between different resources was retained, with more specific wording. The national (and EU) resource adequacy assessments are to 'take account of the contribution of all resources including existing and future generation, energy storage, sectoral integration, demand response, and import and export possibilities and their contribution to flexible system operation'. The final text of the Regulation now provides clear rules for the use of alternative resources, including storage, energy efficiency and demand response. These are listed as measures to be considered for eliminating regulatory distortions that may create adequacy concerns. According to the common CRM design principles, any capacity mechanism shall be 'be open to participation of all resources, including storage and demand side management that are capable of providing the required technical performance' (Art 18b(h)). These principles are also reflected in the EC's 2014 guidelines for assessing the compatibility of CRMs under the state aid rules. Its failure to apply these principles to ensure non-discriminatory treatment of DSR in its assessment of the UK's capacity market measures has been the subject of court proceedings at the European and the national levels.

The Commission-proposed provisions for developing/calculating coherent reliability standards as the basis for capacity-mechanism implementation decisions were retained and further specified (**Art 20**). For cross-border bidding zones, the relevant authorities shall jointly establish reliability standards based on the methodology to be devised by ENTSO-E and approved by ACER [**Art 19(5)**] for calculating: (a) the value of lost load; (b) the "cost of new entry" for generation, or demand response; and (c) the reliability standard referred to in Article 20.' According to Art.20, 'the reliability standard shall be calculated using at least the value of lost load and the cost of new entry over a given timeframe and be expressed as "expected energy not served" and the "loss of load

expectation"'. Having concluded all the steps set out above, the MSs should study cross-border effects, assess the contribution of strategic reserves and then examine the suitability of other types of CMs.

Also largely unchanged from the proposal, the adopted Regulation promotes cross-border participation in capacity mechanisms, to limit distortions to cross-border trade and competition as well as providing incentives for interconnection investment to ensure the EU security of electricity supply at least costs. **Art 21** requires that 'mechanisms other than strategic reserves and where technically feasible, strategic reserves, shall be open to direct cross-border participation of capacity providers located in another Member State (...).' This marks a change from what the Commission had proposed – that strategic reserves should *not* have to be opened to cross-border participation. Retained was the provision that 'national regulatory authorities shall ensure that cross-border participation in capacity mechanisms is organised in an effective and non-discriminatory manner (...).'

While the Commission-proposed 'Regional Operation Centres (ROCs)' was replaced in the negotiations with Regional Coordination Centres (RCCs) having no decision-making powers¹⁰, the Regulation re-stated that these RCCs, national TSOs, the ENTSO-E and NRAs via ACER will be involved in developing technical parameters for the participation of non-domestic capacities as well as the operational rules for their participation in national capacity mechanisms.

Some of the proposed design principles for CRMs were hotly debated, notably on emissions standards that would exclude coal capacity from participation. Despite this, the final text is much alike with what the Commission proposed. **Art 18b(4)**, introduces the Emission Performance Standard (EPS): New generation units¹¹ emitting more than 550gr CO₂/kWh 'shall not be committed or receive payments or commitments for future payments under a capacity mechanism as of entry into force at the latest.' Existing generation units¹² emitting more than 550gr CO₂/kWh **and** more than 350 kg CO₂ on average per year per installed KWe 'shall not be committed or receive payments or commitments for future payments under a capacity mechanism as of 1 July 2025 at the latest.'¹³

⁹ A *divergence* means that the national resource adequacy assessment identifies a concern with regard to a bidding zone but the European resource adequacy assessment has not identified a concern.

¹⁰ The creation of new Regional Coordination Centres (RCCs) builds on the framework established by the Regional Security Coordinators in the CEP.

¹¹ That is, those which had entered commercial production starting after the entry into force of the Regulation.

¹² That is, those which had started commercial production before the entry into force of the Regulation.

¹³ These emissions limits 'shall be calculated based on the design efficiency of the generation unit meaning the net efficiency at nominal capacity under relevant ISO conditions.'

The Commission draft set the threshold at 550gr CO₂/kWh for both new and existing generation units.¹⁴ The distinction between new and existing capacity was introduced during the final trilogues. Additionally, Art 18(b) include a grandfathering clause that excluded contracts approved before 31 December 2019 (now specified in Art 18(b)5) from these general rules.

Why the changes?

Within the Council, member states were split on the need for CRMs, broadly reflecting different positions by the MSs that had already introduced such mechanisms and those that had not. The list of countries that had received approval of their national CRMs increased during the negotiations. Essentially, most of the major MSs had introduced and received approval of their various schemes. These MSs sought to protect their CRMs by avoiding a regulatory straitjacket while accepting a certain degree of Commission supervision as regards the state aid regime (letter of 4 September 2018 from EL, FR, HU, IE, IT, PL and UK).¹⁵ Only a minority of smaller MSs argued against the adoption of CRMs altogether. The EP tried to restrict MS choice of CRMs, preferring the strategic reserve, but failed to change the Council position in the negotiations. The compromise also included retaining various Commission-proposed principles, to prevent CRMs from distorting the energy market – clearly a concession to those member states that fought against CRMs.

The emissions limits imposed on subsidies to polluting generation facilities was one of the most controversial aspects, together with the protection of existing capacity contracts involving such facilities. The Council's negotiating position included an emissions cap of 500 gr CO₂/kWh of energy or a 700 kg CO₂ on average per year per installed kW threshold for new and existing generation. Existing generation should not receive payments beyond 31 December 2030. This was seen as a stricter approach as it was based on two independent metrics. Countries heavily dependent on fossil fuels may be concerned about the EPS provisions.¹⁶

The European Parliament, supported by numerous NGOs, held that any CRM should contribute to realisation of the EU's climate targets. The EP had proposed a different limit for strategic reserves, but this too was abandoned.

These proposals sparked a frenzied lobbying campaign in Brussels. Industry, and predominantly coal-rich MS, argued for more suitable performance standards (expressed in terms of unitary constraints or average limits per year) and a gradual phase-out of existing contracts. This war pitted the electricity industry in the form of Eurelectric – which has several powerful coal-reliant utilities as members – against major gas and renewable energy-focused companies and associations that would benefit from the '550 rule'. They were grouped together under the 'Make Power Clean' label.

In September 2017, a Eurelectric-commissioned report claimed that the early retirement of coal plants and investments in new gas-fired power plants as a result of the proposed '550 rule' would lead to additional costs of around €50 billion over the next two decades.¹⁷ Many NGOs lobbying for the phase-out of fossil-fuel plants disagreed with how the research had been conducted. The objections were numerous: 'the current spread of capacity mechanisms runs counter to the EU's decarbonisation objectives, distorts price and investment signals, favours fossil fuels and nuclear generation to the detriment of the clean energy transition and people's health, interferes with competition, slows down improvements towards a flexible system, and increases costs for all Member States. A recent study revealed that capacity mechanisms are costing European energy customers €58 billion, with the vast majority of this sum going to coal, gas and nuclear power plants.'¹⁸

Prior to the penultimate trilogue meeting on the Electricity Market Regulation on 18 October 2018, 31 NGOs from across Europe urged EU ministers to ensure that CRMs would remain a last-resort solution and would no longer subsidise the combustion of fossil fuels, coal in particular.¹⁹ However, that plea was not heeded, and the Council and Commission deferred to national demands to grandfather existing contracts so that coal -fired units could continue to contribute to meeting national adequacy targets at least until July 2025. The final text is thus a clear compromise between the sharply differing positions.

Final assessment

The Commission's DG on energy and climate change, M.A. Cañete, expressed his satisfaction with the outcome: 'I am

¹⁴ The proposed threshold would have applied to existing plants 5 years after entry into force of the Regulation and to new plants immediately on entry into force.

¹⁵ For the text of the letter see: <https://www.euractiv.com/wp-content/uploads/sites/2/2018/09/CRM-position-PL-FR-IT-UK-IE-HU.pdf>, and for further background to the trilogue: <https://www.eu2018.at/latest-news/news/09-18-Infomral-meeting-of-energy-ministers.html>

¹⁶ See Euractiv (2018), <https://www.euractiv.com/section/electricity/news/eu-hammers-deal-on-coal-phase-out-with-special-polish-clause/>

¹⁷ See report at: <http://g8fip1kplyr33r3krz5b97d1-wpengine.netdna-ssl.com/wp-content/uploads/2017/09/Impact-Assessment-of-an-EPS-550-on-CM-by-Compass-Lexecon-Executive-Summary.pdf>

¹⁸ "Exposed: €58 billion in hidden subsidies for coal, gas and nuclear", Greenpeace EU briefing, 13.09.2018, <https://www.greenpeace.org/eu-unit/issues/climate-energy/1508/media-briefing-e58-billion-in-hidden-subsidies-for-coal-gas-and-nuclear/>

¹⁹ CAN, joint letter to the EC Commissioner for Energy and Climate, available at: <http://www.caneurope.org/docman/climate-energy-targets/3418-joint-ngo-letter-regarding-capacity-mechanisms/file>

particularly pleased that we agreed on a balanced approach to limit capacity mechanisms and reconcile security of supply with our climate objectives. Capacity mechanisms will not be used as a backdoor subsidy of high-polluting fossil fuels as that would go against our climate objectives.²⁰

Not all would agree with this statement; and as confirmed by recent events, increased litigation before national and European courts to prevent the EC approving major subsidies to fossil fuels is to be expected.

Cross-border participation in capacity mechanisms is not yet the rule, but the situation is changing. France and Ireland, for example, are developing plans to allow cross-border participation in their capacity mechanisms

It remains to be seen how cross-border participation will work in practice. On the one hand, there is the risk that the rules for participation (including e.g., derating and control mechanisms) in effect constitute a prohibitive barrier to such participation by capacity located in other control areas. On the other hand, there is the risk that the supply of cross-border capacity may undermine prices in capacity auctions if the eligibility of suppliers is not adequately restricted.

In addition to the question of who controls capacity in scarcity situations – the local or the cross-border TSO – there is a host of more detailed design issues that must be clarified and agreed. The Commission has opted for a solution whereby cross-border generators may offer capacity in capacity auctions. The fact remains, however, that the supply of capacity in scarcity situations depends on interconnector capacity between the markets. How and if the limited interconnector capacity should be allocated and to what extent capacity remuneration will accrue to interconnector owner are further issues for which solutions must be developed.

Apart from cross-border participation, a crucial question for the impact on markets and prices is the extent to which CRMs will continue to afflict a market with sustained overcapacity. This will depend on the implementation of capacity adequacy considerations and the reliability standards adopted by MS, but also on the principles for derating and the inclusion of capacity from different sources. The participation of demand-side resources and storage and the assessment of their reliability emerges as an interesting aspect in this regard.

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²⁰ Commission Press Release, IP/18/6870