

## CAPACITY MECHANISMS WORKING GROUP

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### DESIGNING A COMPETITIVE BIDDING PROCESS, AND ENSURING COMPETITION BETWEEN NEW AND EXISTING CAPACITY

This paper compiles the requirements in the Guidelines on State aid for environmental protection and energy (EEAG) related to competitive bidding processes within generation adequacy measures. It identifies the main design choices in this area and the consideration that will be required in any assessment. It also considers the design choices relevant to ensuring a measure meets the requirement to provide adequate incentives to both existing and future capacity providers.

Note decentralised generation adequacy measures may not employ a central competitive bidding process. Where such a measure constitutes state aid, proportionality would need to be assessed by examining the other elements of the scheme.

#### 1. WHAT DO THE GUIDELINES REQUIRE?

The EEAG include the following requirements related to the obligations placed on providers of capacity in a generation adequacy measure:

(19)43 [definition] 'Competitive bidding process' means a non-discriminatory bidding process that provides for the participation of a sufficient number of undertakings and where aid is granted on either the basis of the initial bid submitted by the bidder or a clearing price. In addition, the budget or volume related to the bidding process is a binding constraint leading to a situation where not all bidders can receive aid.

(226) The measure should be open to and provide adequate incentives to both existing and future generators and to operators using substitutable technologies, such as demand-side response or storage solutions. The aid should therefore be delivered through a mechanism which allows for potentially different lead times, corresponding to the time needed to realise new investments by new generators using different technologies...

(228) The calculation of the overall amount of aid should result in beneficiaries earning a rate of return, which can be considered reasonable.

(229) A competitive bidding process on the basis of clear, transparent and non-discriminatory criteria, effectively targeting the defined objective, will be considered as leading to reasonable rates of return under normal circumstances.

(230) The measure should have built-in mechanisms to ensure that windfall profits cannot arise.

(231) The measure should be constructed so as to ensure that the price paid for availability automatically tends to zero when the level of capacity supplied is expected to be adequate to meet the level of capacity demanded.

(232)(d) The measure should be designed in such a way as to make it possible for...participation of a sufficient number of generators to establish a competitive price for capacity.

(233)(e) The measure should give preference to low-carbon generators in case of equivalent technical and economic parameters.

**Figure 1: Summary of EEAG requirements related to a competitive bidding process and competition between new and existing capacity providers**

Summary	
EEAG requirement	Objective
(19)(228)(229) (232)(d)	1. A genuinely competitive bidding process can ensure the required reasonable rate of return.
(226)	2. The measure should be open to and provide adequate incentives to both existing and future generators and to operators using substitutable technologies. 3. Must allow for the participation of capacity providers with different lead times.
(230)	4. Should have built in mechanisms to avoid windfall profits.
(231)	5. The price paid for availability should automatically tend to zero when the level of capacity supplied is expected to be adequate.
(233)(e)	6. Give preference to lower carbon capacity providers in case of equivalent technical and economic characteristics.

## 2. BIDDING PROCESS AIMS

With appropriately inclusive eligibility rules, a competitive bidding process allows the market to bring forward the technologies that can most cost effectively provide the required capacity (and fulfil whatever technical requirements are associated with the product being auctioned). Competitive pressure should provide bidders with incentives to bid at the level that corresponds to the funding they require to provide capacity, so such a process should identify the funding gap preventing adequate investment without the state support. A competitive bidding process should offer a transparent route to market for existing and potential new market entrants. Finally, as with any mechanism for allocating aid, a mechanism needs to support the successful delivery of benefitting projects – though this may depend on the design of the support instrument that is awarded in the competitive process, as well as the design of the bidding process itself.

### **3. BIDDING PROCESS DESIGN CHOICES**

#### **3.1. Eligibility rules**

In principle, the process should be open to all types of capacity that can meet the necessary technical requirements, as wider participation should increase competition and reduce costs (see separate paper on eligibility).

#### **3.2. Pre-qualification and collateral rules**

Strong performance incentives (penalties) should reduce the need for pre-qualification checks and collateral, since if beneficiaries will face high costs for not delivering capacity then they should have incentives to make an accurate self-assessment of the amount of reliable capacity they can offer into a bidding process.

However, even with strong penalties it may be necessary to audit participants' projects before they are able to bid, to ensure that they have a credible plan for actually delivering capacity that meets the necessary technical requirements, and determine the amount of capacity that a project is able to offer into the bidding process.

For existing projects, this could involve checking past performance. For new projects, this could involve checking their business plan. For a new power plant it could involve checking whether development permits are in place. For a new demand response project, it could involve identifying the meter data points that will be monitored, or the agreements made with the facilities that will reduce demand in practice.

For new projects, it may also be necessary to require collateral from participants, which they would then forfeit if they do not proceed with the project. Without such a requirement, participants may choose to compete, even if they have no intention of ever constructing a project, just to push out competitors or keep the market tight to increase returns for other assets in their portfolio.

Pre-qualification can be important to ensure that the competition in the bidding process is genuine, and reduce the risk that beneficiaries withdraw once the bidding process is complete. However, it is important to ensure the pre-qualification process itself does not become an unnecessary barrier to entry that reduces competition.

#### **3.3. Bidding process structure and bidding rules**

There are many possible variations for the structure of a bidding process, but one main choice is between an open format and a sealed bid format. In sealed bid formats, bids are submitted independently by bidders. Bids are compared and then binding on the successful bidders. In open formats, bidders have an opportunity to react to other bidders' behaviour and adapt their bids during the process.

Open formats create an opportunity for transparent price discovery. An open format is more likely to be valuable where bidders' bids are all dependent on something uncertain (like future electricity prices) and they can therefore see from others' behaviour in the open format whether their own estimates seem to be comparable to their competitors'. Open formats may help increase competition, and also help avoid the 'winner's curse' where a bidder is successful

based on a significantly overoptimistic estimate of a project's profitability. However, open formats may also create opportunities for collusion between participants.

It is possible to combine both formats through a two-stage process with an initial open round followed by a final round of sealed bids.

### **3.4. Pricing rule**

The definition of a competitive bidding process in the EEAG allows for the compensation to beneficiaries to be set 'on either the basis of the initial bid submitted by the bidder or a clearing price'. This allows for both 'pay as bid' and 'pay as clear' (also known as 'uniform price') pricing rules.

Under a pay as bid rule, successful bidders receive a subsidy linked to the level of their bid. This means each individual beneficiary may receive a contract for a different subsidy level at the end of the bidding process, even if they are all providing the same service.

Under a pay as clear (uniform pricing) rule, successful bidders all receive a subsidy linked to the marginal price in the auction (ie. most expensive unit that was successful). This means each individual beneficiary will receive a contract for the same subsidy level at the end of the bidding process.

With a pay as bid pricing rule, there may be greater potential for bidders to try and guess the clearing price rather than bidding their true costs, which could lead to perverse outcomes and/or higher costs.

A price cap could be considered to limit the potential for overcompensation (and prevent beneficiaries recovering all of their costs through a capacity contract when they will also be eligible to receive 'windfalls' from electricity sales and possibly balancing services). However, competition – including the potential for new market entry – should in general provide a much stronger guarantee against overcompensation. Excessively low price caps may deter participation.<sup>1</sup>

Some of the US capacity mechanisms also employ floor prices, which means that even if sufficient supply comes forward below the floor price, beneficiaries would anyway receive the floor price. This would be unlikely to be considered compatible with EEAG point 231, which requires the price paid for availability to automatically tend to zero when the level of capacity supplied is expected to be adequate. A floor price would also create a concern regarding EEAG point 230 which requires mechanisms to avoid windfall profits to beneficiaries.

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<sup>1</sup> Where different technologies require different levels of support and a range of technologies is desired, technology-specific price caps may be used. However, this may also reduce competition between technologies. Such a feature is more likely to be relevant in an auction for renewable capacity than an auction for generation adequacy.

### **3.5. Selection rules**

Defining a clear product requirement and inviting bids just on the basis of cost means it is easy to compare bids and identify the winner/s. But this may favour bidders whose competitive advantage is aligned with the product definition, and care will have to be taken to define appropriate technical requirements (see separate papers on eligibility, and on obligations and penalties).

An important part of the bidding process design is the establishment of the level of demand. This can be a fixed level established at the outset (ie. a vertical demand curve) or can be set as a function of price (in other words, so that once bids have been received more will be bought if the price is lower than expected, and less will be bought if the price is higher than expected). This may have advantages in terms of reducing opportunities for strategic withholding (whereby players deliberately restrict capacity provision by placing high bids, in an attempt to raise prices), since higher priced resources may not be demanded.

In general, a tie break rule will be required to deal with situations in which bidders cannot be selected solely on the basis of financial bids. To meet EEAG point 229, such rules should be based on "... clear, transparent and non-discriminatory criteria, effectively targeting the defined objective ". To meet EEAG point 233(e), specifically, Member States may consider introducing a tie-break rule favouring the lower carbon capacity provider in the case of a tie. To support the proportionality objective, tie break rules could also be based on taking a smaller capacity contract over a larger one (so long as both would provide sufficient capacity to intersect the demand curve), taking existing over new capacity, or taking capacity on a shorter contract over capacity on a longer contract.

### **3.6. Transparency**

Another consideration concerns the information to be published in advance of a competitive bidding process. For example, whether to publish pre-qualification information (ie. number / identity of pre-qualified bidders), whether to publish full scoring rules, and whether to publish the demand curve for the process.

In general, though this may depend on the pre-existing level of competition in the market, transparency should reduce barriers to entry and increase competition. But the extent to which publishing information in advance could create opportunities for collusion should also be considered.

## **4. ENSURING COMPETITION BETWEEN NEW AND EXISTING RESOURCES**

The EEAG require generation adequacy measures to 'provide adequate incentives to both existing and future generators' and to 'allow for the participation of new market entrants with different build times'. Two of the most important design considerations in this respect are the timing of the bidding process in relation to the point in time at which contracted capacity must be available, and the length of contracts available to participants in the bidding process.

#### 4.1. Lead time

As noted in the separate paper on eligibility, the lead time between the bidding process and the point in time when capacity must deliver its obligation needs to be set so that different technologies can be developed in time to participate. This requires consideration of the lead time for new capacity development, as well as the requirements of demand response capacity which may be unwilling to commit to demand reductions several years ahead<sup>2</sup>.

For a generation adequacy measure, to ensure the potential participation of new plants the competitive bidding process is likely to need to be held at least two years ahead of the year in which capacity is required.

#### 4.2. Contract lengths

Depending on the financing arrangements for new power plants in a Member State, the contract lengths available may have a significant impact on the extent to which new projects can compete with existing projects. A longer contract provides additional certainty which can reduce the cost of financing a new project by allowing the investor to spread any debt service costs over the life of the contract. This could reduce the capacity price required per year, and help ensure a new project is competitive against existing projects in the market. This can help ensure the measure overall is proportionate, since if in years when new entry is required all existing capacity is also paid a high price, this could lead to windfalls for existing capacity<sup>3</sup>. The potential for new entry at a competitive price may also be critical for controlling the market power of existing capacity providers.

Longer contracts potentially come with significant downsides, however, for example:

- They reduce competition in future bidding processes (since beneficiaries holding long contracts will effectively be out of the market for the duration of their contract).
- They transfer risks to the consumer (both the risk that electricity prices will rise in future and capacity prices fall, and – as more contracts are signed – the risk that contracted capacity will not be required in future).
- They increase the costs of any future market design transition, since long contracts would in principle need to be honoured if in future a new market design was adopted.

In SA.35980 the UK argued that long contracts (up to 3 years for existing plants facing significant refurbishment costs, and up to 15 years for new plants) were necessary not just to lower costs

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<sup>2</sup> The UK approach to this problem (see SA.35980) was to schedule two auctions for each delivery year, one four years ahead, and another one year ahead. The majority of capacity expected to be required is contracted through the four year ahead auction, with the year ahead auction allowing a fine tuning of the capacity requirement based on the latest available demand projections. The amount of capacity reserved for procurement one year ahead is based on the expected contribution of demand response (though demand response is also eligible to participate four years ahead).

<sup>3</sup> In the context of capacity mechanisms, perceived windfalls to beneficiaries are potentially critical to the long term success of a measure, since perceived windfalls are a major cause of missing money (to the extent that beneficiaries fear regulators will take action to recover them). So there is likely to be benefit in a model that enables relatively smooth long-term capacity prices.

in years when new entry was required, but also to make possible new investment by independent generators requiring project finance. The UK argued that the 15 year term enabled two standard 7 year commercial debt terms to be included in the capacity contract term, allowing deals to be structured much more competitively.

In the United States the ISO New England regional market has included a capacity mechanism since 2008. In the original design, existing resources were offered one year contracts, and new resources five year contracts. There have still been significant variations in capacity prices, and associated outcry about perceived windfalls<sup>4</sup>. Recent reforms of the ISO New England capacity mechanism have increased the contract duration available to new plants from five to seven years.

In the New York ISO system, new investment has come forward despite the system only offering rolling 6 month capacity contracts to both new and existing resources. In the PJM system, also in the Eastern US, the capacity mechanism offers one year contracts to all participants. New investment has still been brought forward under this model, and capacity prices have also been highly variable.

The extent to which new investment is possible under short capacity contracts may depend on potential beneficiaries' financing practices, and the extent to which suppliers are prepared to sign bilateral contracts with generators to support new projects. It will also depend on market participants' future expectations regarding the level and continued availability of capacity payments, and the level of future electricity prices.

Careful analysis will be required in any case to demonstrate that the trade-off between reducing the costs of new entry, and increasing the risk transfer to consumers, have been fully considered.

More complex designs may also be possible, to attempt to better reflect the extent to which Government / consumers value particular contract durations. This could involve, for example, identifying the lower capacity price that would make a consumer favour a five year capacity contract over a one year contract<sup>5</sup>.

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<sup>4</sup> See for example: <http://www.ct.gov/deep/cwp/view.asp?Q=555102&A=4568>

<sup>5</sup> The UK recently published a consultation on this, but has decided that for at least the 2015 auction, no more complicated methodology will be applied and there will remain a choice of one year agreements for existing plants, up to three year agreements for refurbishing plants, and up to fifteen year agreements for new plants: <https://www.gov.uk/government/consultations/consultation-on-capacity-market-supplementary-design-proposals-and-transitional-arrangements>

## 5. QUESTIONS FOR DISCUSSION

- Have we identified the main objectives for a competitive bidding process?
- Have we identified the main design choices in this area?
- Are other designs of competitive generation adequacy schemes, that attain the same or similar results possible?
- Is a pre-qualification process required, or can the design of the capacity obligation provide sufficient incentives for participants to determine the level of capacity they offer into the bidding process?
- What information should be published in advance of a competitive bidding process?
- Do new resources require longer contracts? How should the balance be struck between this need (if identified) and the risk transfer to consumers entailed by long contracts for new projects?