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Performance incentives in capacity mechanisms: conceptual considerations and empirical evidence

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Abstract— Performance incentives are elements of capacity mechanism design aimed at prompting committed agents to manage their resources in such a way that they eventually meet their obligations when the system is tight. These incentives can be introduced in practice by means of two different (but non-conflicting) approaches in capacity mechanisms. First, performance incentives can be linked to constraints on tradable quantities (the so-called firm capacity or firm energy), which limit the amount of "reliability" that a given resource may sell in the mechanism, and which may be recalculated penalising potential unfulfilments. Second, they can be implemented as financial penalties for failure to comply with the commitments foreseen in the capacity contract. The first approach has been applied since the outset of capacity markets. The second did not receive much attention in the early stages of the implementation of adequacy mechanisms, but there is a growing trend on implementing it in modern designs. In this paper, after framing the problem conceptually, empirical evidence (particularly from Colombia, ISO New England, PJM, United Kingdom, and France) is compiled to reveal current trends in enhancing short-term performance in capacity mechanisms.

Index Terms— Capacity mechanisms, performance incentives, explicit penalty, reliability product, system adequacy

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