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The allocation of system costs: Future-proofed methodologies for decarbonising European power sectors

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Abstract-

The increased use of renewable energy sources, among other factors, is causing system costs to grow quickly in European power sectors, especially those related to frequency control and congestion management. Currently, most European countries allocate these costs to consumers using simplistic methodologies, either via network tariffs or specific volumetric charges. These methodologies require urgent reform. This article reviews the economic theory and European experiences regarding the allocation of system costs and puts forward a comprehensive high-level proposal to improve the design of these charges. Balancing capacity costs should be partially embedded in the imbalance price, with price caps limiting the possibility of very high prices during periods of low imbalance volumes. Congestion management costs, like network expansion costs, are driven by transmission capacity scarcity and should be recovered through network tariffs. Any system costs that cannot be allocated according to cost causality should be recovered through stabilised residual charges that do not distort the efficient signals sent by cost-reflective charges and prices. Discounts and exemptions for certain categories of end users should only apply to these residual charges. The impact of this proposal has been tested in a case study based on the Spanish power system.

Index Terms- System services; Ancillary services; System costs; Grid congestion; Network tariffs

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