

# **Expanding interconnection capacity to integrate intermittent generation in the Iberian Peninsula**

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## **Abstract-**

**Increasing penetration of intermittent energy sources in power systems has been requiring higher operational flexibility and cross-border transmission capacity. Intermittent generation, especially wind and solar power, has grown significantly in the Iberian Peninsula during the last decade and it will keep growing in the next year. Owing to limited interconnection capacity with the French and the Moroccan power systems, generation intermittency has been dealt with mostly within Spain and Portugal, helped by a flexible generation mix. Despite the relatively high flexibility of the Iberian system, in some situations, renewable generation output had to be curtailed. In general, renewable energy curtailment is an emergency action taken in case of network constraints or in case of generation surplus at single node. This emergency action is expected to be more common in the near future if no additional operating measures are taken. This study focuses on the expansion of interconnection capacity that would be required in order to integrate intermittent generation surplus in the Iberian Peninsula in the period 2020-2050. For this purpose, the trade-off between transmission investment costs and the costs of renewable energy curtailment is analysed. Results for different intermittent generation levels and price scenarios are presented and discussed.**

## **Index Terms-**

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