

# Values and impacts of incorporating local flexibility services in transmission expansion planning

E. F. Álvarez Quispe; L. Olmos Camacho; A. Ramos Galán; K. Antoniadou-Plytaria; D. Steen; L.A. Tuan

## Abstract-

This paper presents a cost-based TSO-DSO coordination model to quantify the value of local flexibility services and analyze its impact on the transmission grid expansion and the system operation. Flexibility is provided to the DC power flow transmission grid model by transmission network interfacing multiple 33-bus distribution grids were performed to validate the model and assess the values and impacts of local flexibility on the transmission system expansion. The results showed that the proposed model modified the investment plan and dispatch of flexibility resources reducing the investment and operation cost of the transmission system.

**Index Terms-** TSO-DSO coordination Flexibility service Microgrids Transmission expansion

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