CASE OF STUDY: IMPACT OF DISTRIBUTED GENERATION ON DISTRIBUTION ELECTRICAL NETWORKS

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ABSTRACT

The opening to Distributed Generation (DG) in Bolivia came with the promulgation of Supreme Decree No. 4477 (March 2021). Within this framework, distribution companies face a new challenge to ensure the quality of energy supply, considering potential injections into their grids. To anticipate possible negative impacts on the distribution network of ELFEC (Electricity Company of Cochabamba), scenarios of potential injections from distributed generators in the city of Cochabamba were studied. For this purpose, the two most powerful photovoltaic installations in the region were analyzed, which currently operate in self-consumption mode. The studied systems were the solar parking lot at the Julio León Prado campus of the Bolivian Private University (UPB) and the installation of ENDE (National Electricity Company) Transmission. Based on the installed capacity and self-consumption of each installation, injected flows were studied, and changes in electrical working parameters such as active power, reactive power, and voltage at the nearby node and distribution company's transformer were observed. This allowed the assessment of potential impacts on energy supply.

Keywords: Distributed Generation, Photovoltaic Systems, Medium and Low Voltage Networks, Potential Injected Flows.

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