

Electricity Expansion Planning Under Environmental Constraints

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In the past, power generation expansion planning was mainly based on a cost minimization target subject to acceptable level of system reliability. Nowadays, environmental considerations have changed into important planning priorities increasing the capacity expansion costs. Socially, this increase is compensated by the reduction in external costs caused by lower levels of emissions. In this paper, emission constraints have been imposed on generation capacity expansion planning of a grid much the same as Iran power grid for the period of 2005-2023 using WASP package. Changes in system expansion costs have been compared with changes in environmental damage costs. According to the results, in long term the increase in capacity expansion cost caused by imposing emissions constraints is compensated with reduction of external costs of emissions.

Keywords: Environmental Pollutants, Generation Expansion Planning, Social Cost, WASP