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An enhanced screening curves method for considering thermal cycling operation costs in generation expansion planning

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Abstract— Generation capacity expansion trends have clearly evolved in the last decades. In the present context, renewable generation technologies are expected to reach large penetration levels. Among other effects, these technologies are changing the scheduling regime (and thus the unit-commitment costs) of the rest of the generating facilities, increasing for instance the need of cycling conventional thermal generation. In this paper we further develop the traditional screening curves technique so as to incorporate a sound representation of the cycling operation of thermal units. The so-resulting approach provides a more comprehensive representation of thermal operation while keeping the screening curves well-known capability to provide valuable analytic insights on the capacity expansion problem.

Index Terms—

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