

## عنوان مقاله:

Modeling Renewable Energy Policies in an Integrated Renewable-Conventional Generation Planning Framework

## محل انتشار:

مجله تحقیق و فناوری در صنعت برق, دوره 1, شماره 2 (سال: 1401)

تعداد صفحات اصل مقاله: 13

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## خلاصه مقاله:

In recent decades, the welfare of human being is seriously threatened by climate change. As a result, numerous energy regulations have been put in place to encourage the expansion of investments in renewable energy. In this context, open questions remain regarding the impacts that these policies may have on generation expansion planning (GEP). This paper addresses this issue by applying three of the most widely adopted energy strategies, namely quota obligation, feed-in tariffs, and emission trade system, to the GEP problem, resulting in an integrated renewable-conventional generation expansion planning (IRCGEP) model with a properly modified cost function and extra constraints. To achieve this aim, first, the IRCGEP model is solved using general algebraic modeling system from a generation company (GENCO) perspective. Afterward, according to the obtained optimized expansion strategies, the policies impact on the social welfare terms including consumer surplus, GENCO profit, and environmental damages cost are investigated, while they are included on the Bergson-Samuelson social welfare function. Moreover, to assess the financing mechanism effect of the policies on consumer surplus, a suitable attribute known as the "virtual price" is put forth. Numerical studies shed light on the reactions of investment decisions and the social welfare to the energy policies.

## کلمات کلیدی:

Generation expansion planning (GEP), Environmental damages cost, Renewable energy policy, Renewable penetration rate, Social Welfare, Virtual price

## لینک ثابت مقاله در پایگاه سیویلیکا:

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