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## AC transmission network expansion planning considering losses (Conference Paper)

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### Abstract

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This paper proposes to solve the transmission network expansion planning problem (TNEP) using the AC model formulated with full non-linear load flow equations, incorporating the cost of losses in the transmission network. Additionally, the decomposed formulation finds the location and amount of the reactive compensation needed in the system. A comparison between Evolutionary Programming (EP) and a variation of EP with a Cultural Algorithm (CEP) is presented to solve this very complex optimization problem. The results are obtained using Garver's 6-bus test system and IEEE 24-bus test system. Index Terms-AC model, Cultural Algorithm, Evolutionary Programming, Optimization, Transmission network expansion planning. © 2018 IEEE.

### SciVal Topic Prominence ⓘ

Topic: Expansion | Planning | Planning TEP

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### Indexed keywords

Engineering controlled terms:

- Computer programming
- Electric load flow
- Electric power transmission networks
- Evolutionary algorithms
- Smart power grids

Engineering uncontrolled terms

- AC transmission
- Complex optimization problems
- Cultural Algorithm
- Index terms
- Nonlinear load
- Reactive compensation
- Test systems
- Transmission network expansion planning

Engineering main heading:

- Expansion

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